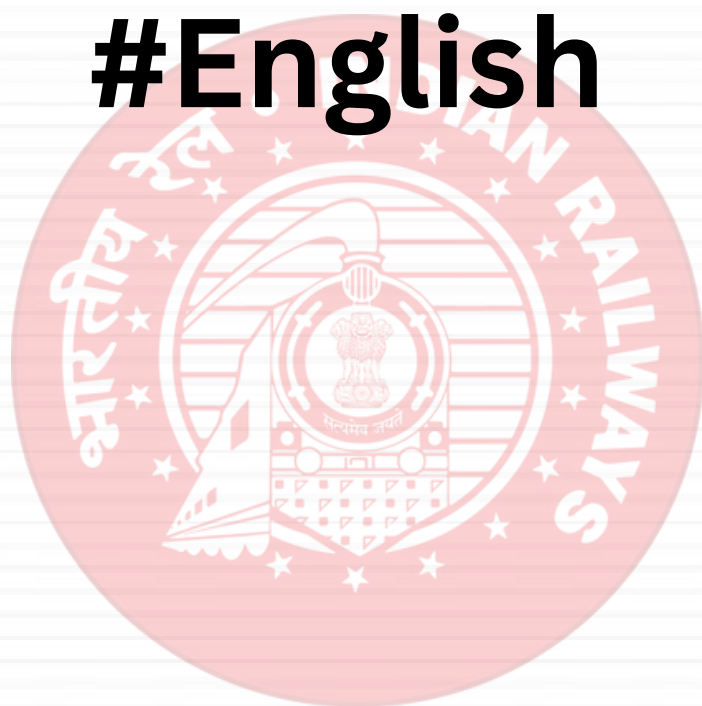


RRB JE CBT-02 2024

Answer Key Compilation

All Branch

#English



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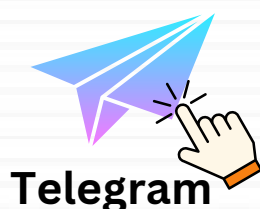


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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Civil and Allied Engineering

*** Note**

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 The people of _____ were famously involved in execution of the Chipko movement.

Ans A). Gujarat B). Delhi C). Garhwal Himalayas D). Assam

Correct Answer: C

Q.2 Why do covalent compounds generally have low melting and boiling points?

Ans A). They contain metallic bonds. B). They have strong electrostatic forces. C). They have a rigid lattice structure.
D). They have weak intermolecular forces.

Correct Answer: D

Q.3 Which of the following elements has an atomic number of 8?

Ans A). Hydrogen B). Nitrogen C). Carbon D). Oxygen

Correct Answer: D

Q.4 In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.

Ans A). phosphates B). chlorine C). organochlorine D). DDT

Correct Answer: D

Q.5 Which function key is used to move text or graphics in a document?

Ans A). F2 B). F1 C). F12 D). F5

Correct Answer: A

Q.6 A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?

Ans A). 3.750 J B). 1.875 J C). 5.625 J D). 7.500 J

Correct Answer: C

Q.7 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?

Ans A). Galileo B). Global Positioning System (GPS) C). Navigation with Indian Constellation (NavIC)
D). Global Navigation Satellite System (GLONASS)

Correct Answer: C

Q.8 Which of the following options is NOT a greenhouse gas?

Ans A). Methane B). Carbon tetrachloride C). Nitrous oxide D). Carbon dioxide

Correct Answer: B

Q.9 The main reason for which we are dependent on air is our ____.						
Ans A). osmoregulation		B). excretion		C). digestion	D). respiration	Correct Answer: D
Q.10 ಮೌರ್ಯರ ಕಾಲದಲ್ಲಿ ಈ ಕೆಳಗಿನ ಯಾವುದು ಕುಶಲಕರ್ಮಿಗಳ ವೃತ್ತಿ ಸಂಘವಾಗಿರಲಿಲ್ಲ?						
Ans A). ಜ್ಯೋತಿಷಿಗಳು		B). ಬ್ಯಾಂಕರ್‌ಗಳು ಮತ್ತು ವ್ಯಾಪಾರಿಗಳು		C). ಕುಂಬಾರರು	D). ಬಡಗಿಗಳು	Correct Answer: A
Q.11 ಈ ಕೆಳಗಿನವರಲ್ಲಿ ಯಾರು ನಿರ್ದೇಶಕ ತತ್ವಗಳನ್ನು ಭಾರತದ ಸಂವಿಧಾನದ 'ಜೀವ ರಕ್ಷಕ ನಿಬಂಧನೆಗಳು' (life-giving provisions) ಎಂದು ಉಲ್ಲೇಖಿಸಿದ್ದಾರೆ?						
Ans A). ಐವರ್ ಜೆನ್ನಿಂಗ್ಸ್		B). BR ಅಂಬೇಡ್ಕರ್		C). HM ಸೀರ್ವಾಯಿ	D). LM ಸಿಂಘ್	Correct Answer: D
Q.12 What is the primary function of a firewall tool in a computer network?						
Ans A). To speed up internet connections B). To monitor and control incoming and outgoing network traffic C). To store data securely						
D). To detect and remove viruses						
Correct Answer: B						
Q.13 The President has the power to dissolve which house of Parliament?						
Ans A). Lok Sabha only		B). Legislative Assembly		C). Both Rajya Sabha and Lok Sabha	D). Rajya Sabha only	Correct Answer: A
Q.14 Who among the following developed the notation system for Hindustani classical music?						
Ans A). Pandit Ravi Shankar B). Pandit Vishnu Narayan Bhatkhande C). Ustad Bismillah Khan D). Ustad Amjad Ali Khan						
Correct Answer: B						
Q.15 Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?						
Ans A). NUMBERTOTEXT()		B). VALUE()		C). FORMAT()	D). TEXT()	Correct Answer: D
Q.16 In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?						
Ans A). 400 metres T20		B). 200 metres T20		C). 100 metres T20	D). 600 metres T20	Correct Answer: A
Q.17 A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?						
Ans A). 45%		B). 16.67%		C). 20%	D). 25%	Correct Answer: B
Q.18 For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year ____.						
Ans A). 1984		B). 1992		C). 1986	D). 1972	Correct Answer: C
Q.19 Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?						
Ans A). Smriti Mandhana		B). Mithali Raj		C). Harmanpreet Kaur	D). Jhulan Goswami	Correct Answer: A
Q.20 A concave lens has a focal length of -2 cm. What is its power?						
Ans A). 25 D		B). -50 D		C). -0.5 D	D). 0.5 D	Correct Answer: B
Q.21 What does LAN stand for?						
Ans A). Local Area Network		B). Large Area Network		C). Limited Access Node	D). Linked Access Network	Correct Answer: A
Q.22 ಪರಮಾಣು ತ್ಯಾಜ್ಯಗಳಿಂದ ಹೊರಸೂಸುವ ವಿಕಿರಣಗಳು ಹೆಚ್ಚಿನ ದರದಲ್ಲಿ _____ ಉಂಟುಮಾಡುತ್ತವೆ ಎಂದು ತಿಳಿದುಬಂದಿದೆ.						
Ans A). ಭಾವನಾತ್ಮಕ ದೋಷಗಳು		B). ಉತ್ಪರಿವರ್ತನೆಗಳು		C). ಸಿಂಡ್ರೋಮ್‌ಗಳು	D). ರೋಗಗಳು	Correct Answer: B
Q.23 Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?						
Ans A). United States		B). Canada		C). France	D). Sweden	Correct Answer: D

Q.24 Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?				
Ans A). =A2+B2	B). =MULTIPLY(A2,B2)	C). =A2*B2	D). =A2-B2	Correct Answer: C
Q.25 An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____. 				
Ans A). -37.5 cm	B). -10.0 cm	C). -9.37 cm	D). 17.5 cm	Correct Answer: A
Q.26 Due to global warming, the temperature of the earth has increased by _____				
Ans A). 0.8°C	B). 0.7°C	C). 0.6°C	D). 0.5°C	Correct Answer: C
Q.27 An alloy is considered a homogeneous mixture because:				
Ans A). it contains two or more phases B). it exhibits uniform composition throughout C). its components can be separated by filtration D). its components are chemically combined in fixed proportions				Correct Answer: B
Q.28 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Organic fertilisers	B). Fungicides	C). Herbicides	D). Pesticides	Correct Answer: A
Q.29 Which of the following bridges is constructed over the Brahmaputra River in India?				
Ans A). Dhola-Sadiya Bridge	B). Howrah Bridge	C). Mahatma Gandhi Setu	D). Pamban Bridge	Correct Answer: A
Q.30 Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?				
Ans A). Jenoptik	B). Leica	C). Schneider Kreuznach	D). Carl Zeiss AG	Correct Answer: D
Q.31 The kinetic energy of an object is derived using which of the following equations of motion?				
Ans A). $a = (v - u) / t$	B). $s = ut + \frac{1}{2}at^2$	C). $v = u + at$	D). $v^2 - u^2 = 2as$	Correct Answer: D
Q.32 What happens to the pH of pure water when a few drops of lemon juice are added?				
Ans A). The pH increases	B). The pH remains the same	C). The pH becomes neutral	D). The pH decreases	Correct Answer: D
Q.33 Which of the following correctly differentiates mixtures and compounds?				
Feature	Mixture	Compound		
A) Separation	Can be separated by physical methods	Requires chemical me		
B) Composition	Fixed ratio	Variable ratio		
C) Properties	Always the same as constituents	Different from constit		
D) Formation	By chemical reaction	By simple mixing		
Ans A). Option A (Separation) is correct B). Option D (Formation) is correct C). Option B (Composition) is correct D). Option C (Properties) is correct				Correct Answer: A
Q.34 What is the general orientation of the Himalayan ranges in the northwestern part of India?				
Ans A). East-South	B). Northeast to Southwest	C). South-North	D). Northwest to Southeast	Correct Answer: D
Q.35 What is the primary function of a computer firewall?				
Ans A). To speed up internet connectivity B). To prevent unauthorised access to a private network C). To detect and remove computer viruses D). To store user passwords securely				Correct Answer: B
Q.36 Which operating system is known for its open-source nature and community-driven development for desktops and laptops?				
Ans A). iOS	B). macOS	C). Windows	D). Linux	Correct Answer: D
Q.37 Which type of RAM is faster and DOES NOT require refreshing?				
Ans A). SRAM	B). DRAM	C). Flash Memory	D). ROM	Correct Answer: A

Q.38 A sound wave with a low frequency will have _____.				
Ans A). a low amplitude	B). a short wavelength	C). a high pitch	D). a low pitch	Correct Answer: D
Q.39 The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?				
Ans A). Article 72	B). Article 110	C). Article 123	D). Article 356	Correct Answer: C
Q.40 A metal wire is stretched, but it does not break easily. This property is known as:				
Ans A). hardness	B). ductility	C). malleability	D). brittleness	Correct Answer: B
Q.41 The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?				
Ans A). 256 u	B). 32 u	C). 64 u	D). 128 u	Correct Answer: A
Q.42 Where can one find the option to change a PowerPoint template?				
Ans A). View → Slide Master	B). Insert → Themes	C). Design → Themes	D). Home → Layout	Correct Answer: C
Q.43 Who is known as the leader of the Green Revolution in India?				
Ans A). C Subramaniam	B). Prof. MS Swaminathan	C). Dr. Rajendra Prasad	D). Tribhuvandas Kishibhai Patel	Correct Answer: B
Q.44 Which of the following is NOT a source of collection of municipal solid waste?				
Ans A). Waste from homes	B). Radioactive waste	C). Waste from hospitals	D). Waste from schools	Correct Answer: B
Q.45 Electricity production is categorised under which of the following economic sectors?				
Ans A). Primary sector	B). Secondary sector	C). Tertiary sector	D). Quaternary sector	Correct Answer: B
Q.46 Who among the following established the Bengal Chemical Swadeshi Stores?				
Ans A). Dadabhai Naoroji	B). Surendranath Banerjee	C). BG Tilak	D). Acharya PC Ray	Correct Answer: D
Q.47 The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.				
Ans A). UV-C	B). UV-B	C). UV-D	D). UV-A	Correct Answer: B
Q.48 What happens when you click on the 'Forward' button in an email?				
Ans A). A blank email opens.	B). The original message is copied into a new email draft.	C). The email is permanently deleted.	D). The email is automatically sent to all contacts.	Correct Answer: B
Q.49 Which of the following will increase the heat produced by a heating element?				
Ans A). Using a material with high conductivity	B). Decreasing the applied voltage	C). Using a wire of lower resistance	D). Increasing the current flowing through the wire	Correct Answer: D
Q.50 A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.				
Ans A). uniform motion	B). rotational motion	C). random motion	D). non-uniform motion	Correct Answer: A

Q.1 ಉಣ್ಣೆ, ಸೆಣಬು, ಕಲ್ಲಾರು ಇವುಗಳನ್ನು _____ ಎಂದು ವರ್ಗೀಕರಿಸಲಾಗಿದೆ.				
Ans A). ಮಾನವ ನಿರ್ಮಿತ ನಾರುಗಳು	B). ನೈಸರ್ಗಿಕ ನಾರುಗಳು	C). ಖನಿಜ ನಾರುಗಳು	D). ಪ್ರಾಣಿಜನ್ಯ ನಾರುಗಳು	Correct Answer: B
Q.2 ಮೊದಲೇ ರಚಿಸಿದ ವಸ್ತುಗಳನ್ನು ಬಳಸಿ ನಿರ್ಮಿಸಿದ ಕಟ್ಟಡಗಳಲ್ಲಿ (prefabricated buildings), ತಾಪನ ಪ್ರಸಾರದ (thermal expansion) ಕಾರಣದಿಂದ ಆಗುವ ಚಲನೆಯನ್ನು ಹೀರಿಕೊಳ್ಳಲು ಜಾಯಿಂಟ್‌ನ ಅತ್ಯುತ್ತಮ ವಿಧ ಯಾವುದು?				
Ans A). ಎಕ್ಸ್ ಪಾನ್ಸನ್ ಜಾಯಿಂಟ್	B). ರಿವೆಟೆಡ್ ಜಾಯಿಂಟ್	C). ಥ್ರಡೆಡ್ ಜಾಯಿಂಟ್	D). ವೆಲ್ಡೆಡ್ ಜಾಯಿಂಟ್	Correct Answer: A

Q.3 Which of the following prefabrication techniques is used in bridge construction?

Ans A). Panelised Construction B). Precast Segmental Construction C). Formwork-Free Construction D). Modular Construction

Correct Answer: B

Q.4 Which type of window consists of two sashes sliding vertically?

Ans A). Casement window B). Sliding window C). Double-hung window D). Fixed window

Correct Answer: C

Q.5 In a Symons rain gauge, the collected rainfall is measured using:

Ans A). a digital display B). a rotating drum C). a graduated scale D). a pressure sensor

Correct Answer: C

Q.6 For an unsymmetrical angle section, the principal axes of inertia pass through which point?

Ans A). The midpoint of the shorter leg B). The intersection of the legs C). The centroid of the section D). The midpoint of the longer leg

Correct Answer: C

Q.7 The contractors profit added in analysis of rates is:

Ans A). 20% of the total material and labour cost B). 20% of the total material cost C). 10% of total material cost
D). 10% of total material and labour cost

Correct Answer: D

Q.8 Match the following railway zones with their headquarters.

Railway Zones Headquarters

A. Northern Railway 1. Kolkata
B. Western Railway 2. Mumbai
C. Eastern Railway 3. New Delhi
D. Southern Railway 4. Chennai

Ans A). A-1, B-3, C-2, D-4 B). A-3, B-1, C-2, D-4 C). A-4, B-1, C-3, D-2 D). A-3, B-2, C-1, D-4

Correct Answer: D

Q.9 The per cubic metre rates are ₹3,000 per cum for stone ballast, ₹2,000 per cum for coarse sand and ₹10,000 per cum for cement. For production of 10 m^3 of 1 : 3 : 6 cement concrete, the cost will be (to nearest thousand):

Ans A). ₹51,000 B). ₹66,000 C). ₹26,000 D). ₹84,000

Correct Answer: A

Q.10 Which of the following is one of the standard gauges used in Indian Railways for Broad Gauge (BG) tracks?

Ans A). 1220 mm B). 1435 mm C). 1000 mm D). 1676 mm

Correct Answer: D

Q.11 The working or drawing area in the AutoCAD software is termed as _____.

Ans A). Model Space B). Layout Space C). Screen Space D). Paper Space

Correct Answer: A

Q.12 Which of the following is the SI unit of specific volume?

Ans A). kg/m^3 B). m^2/N C). N/m^2 D). m^3/kg

Correct Answer: D

Q.13 When rainfall intensity is greater than infiltration capacity indicated by the infiltration capacity curve, the excess water contributes to:

Ans A). groundwater recharge B). evapotranspiration C). surface runoff D). evaporation

Correct Answer: C

Q.14 The first paint coat on a new surface that fills the pores and facilitates adhesion of subsequent paint-coats to a surface is called _____.

Ans A). putty coat B). finishing coat C). under coat D). priming coat

Correct Answer: D

Q.15 Slate and laterite are examples of _____.

Ans A). argillaceous rock B). siliceous rock C). calcareous rock D). argillaceous and calcareous rocks, respectively

Correct Answer: D

Q.16	While painting new wood work, the process of filling up of nail holes, dents, and cracks with putty is known as _____.			
Ans A).	caulking	B). blocking	C). stopping	D). knotting
Correct Answer: C				
Q.17	Which of the following documents will include name of authorities inviting tender, name of work and its location, time of completion, date, time and place of tender?			
Ans A).	Tender notice	B). Tender opening form	C). Muster roll	D). Contract document
Correct Answer: A				
Q.18	_____ is used for filling in cracks, gaps, cavities, etc. for the purpose of repairing and waterproofing.			
Ans A).	Curing	B). Ramming	C). Grouting	D). Tamping
Correct Answer: C				
Q.19	Which of the following commands is used to create a surface in Autodesk Civil 3D?			
Ans A).	Define Surface	B). Surface Create	C). Create Surface	D). Surface from Objects
Correct Answer: C				
Q.20	The formation of hairline cracks on a plastered surface is called _____.			
Ans A).	splitting	B). blistering	C). crazing	D). cracking
Correct Answer: C				
Q.21	Why must compression reinforcement in a doubly reinforced beam be enclosed by stirrups?			
Ans A).	To reduce the amount of steel required in compression		B). To increase the slenderness ratio of the beam	
C).	To prevent buckling and improve ductility by confining the concrete		D). To provide additional strength to the tension reinforcement	
Correct Answer: C				
Q.22	ರಾಸಾಯನಿಕ ಘೃಂಡೇಷನ್‌ಗಳನ್ನು ಈ ಸಂದರ್ಭಗಳಲ್ಲಿ ಶಿಫಾರಸು ಮಾಡಲಾಗುತ್ತದೆ:			
Ans A).	ಮಣ್ಣು ಅಧಿಕ ಮಟ್ಟದ ಭಾರ ಹೊರುವ ಸಾಮರ್ಥ್ಯವನ್ನು ಹೊಂದಿದ್ದರೆ		B). ಲೋಡ್ ಏಕಪ್ರಕಾರವಾಗಿ ವಿತರಣೆಯಾಗಿದ್ದರೆ	
C).	ಕಲ್ಲಿನಂತಹ ಮೇಲ್ಮೈನ ಮೇಲೆ ಕಟ್ಟಡವನ್ನು ಕಟ್ಟಿರುವಾಗ		D). ಡಿಫರೆನ್ಷಿಯಲ್ ಸೆಟಲ್ಮೆಂಟ್ ಕಡಿಮೆಗೊಳಿಸಬೇಕಿದ್ದಾಗ	
Correct Answer: D				
Q.23	Which of the following statements is NOT true with respect to chemical grouting?			
Ans A).	Can be employed to treat very fine fractures in moist environments.		B). Can be used to treat narrow concrete cracks.	
C).	The chemicals react with water to form gel/solid precipitate.		D). Does not require a high level of skill for application	
Correct Answer: D				
Q.24	Restricting the height of masonry constructed per day is a remedial measure to prevent:			
Ans A).	unequal settlement of masonry	B). lateral pressure on the walls	C). unequal settlement of subsoil	D). lateral movement of subsoil
Correct Answer: A				
Q.25	What is a good practice to follow when mixing concrete in hot weather?			
Ans A).	Add large amount of fine aggregate to the mix.	B). Use warm water for mixing.	C). Add large amount of cement to the mix.	
D).	Use cold water to reduce the temperature of the mix.			
Correct Answer: D				
Q.26	As per IS 2296-1982, water is classified into five categories. Which of the following does Category E represent?			
Ans A).	Surface water for irrigation	B). Surface water for aquaculture	C). Surface water for drinking	D). Surface water for outdoor bathing
Correct Answer: A				
Q.27	ಗೋಡೆಗಳಿಗೆ ಹಾನಿಮಾಡದ ಬಿರುಕುಗಳಿಗೆ (non-structural cracks) ಸಂಬಂಧಿಸಿದಂತೆ ಈ ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಯಾವುದು ಸರಿಯಾಗಿದೆ?			
Ans A).	ಇದರ ಪರಿಣಾಮವಾಗಿ ಅಡಿಪಾಯಗಳು, ಚಪ್ಪಡಿಗಳು ಇತ್ಯಾದಿಗಳಲ್ಲಿ ವ್ಯಾಪಕವಾದ ಬಿರುಕುಗಳು ಉಂಟಾಗುತ್ತವೆ.			
B).	ಅವು ಕಟ್ಟಡದ ರಚನಾತ್ಮಕ ಸ್ಥಿರತೆಗೆ ಅಪಾಯವಾಗಿವೆ.			
C).	ಅವುಗಳನ್ನು ದುರಸ್ತಿ ಮಾಡುವುದು ಮತ್ತು ಸರಿಪಡಿಸುವುದು ಸಾಮಾನ್ಯವಾಗಿ ತುಂಬಾ ಕಷ್ಟ.			
D).	ಕಟ್ಟಡ ಸಾಮಗ್ರಿಗಳ ಮೇಲಿನ ಪರಿಸರದ ವ್ಯತ್ಯಾಸಗಳಿಂದ ಅವು ಉಂಟಾಗುತ್ತವೆ.			
Correct Answer: D				
Q.28	Which type of shoring is used to support unsafe walls of a building during its repair?			
Ans A).	Cantilever shoring	B). Dead shoring	C). Raking shoring	D). Flying shoring
Correct Answer: C				

Q.29 A simply supported beam of 10 m carries a uniformly distributed load (UDL) of 5 kN/m over its entire span. What is the reaction force at each support?

Ans A). 20 kN

B). 30 kN

C). 25 kN

D). 50 kN

Correct Answer: C

Q.30 According to the Indian Road Congress(IRC73-1980), in the calculation of Overtaking Sight Distance (OSD), the reaction time 't' of the driver is assumed to be:

Ans A). 1 second

B). 3 seconds

C). 5 seconds

D). 2 seconds

Correct Answer: D

Q.31 Which of the following equipment is essential for the well-point system?

Ans A). Reciprocating pump

B). Jet pump

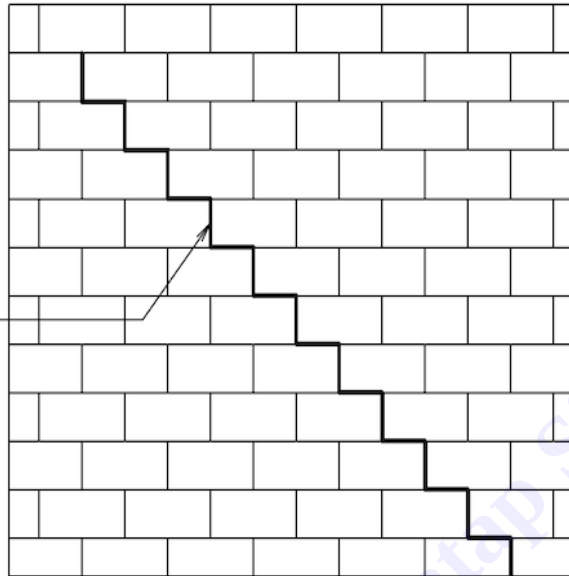
C). Centrifugal pump

D). Sump pump

Correct Answer: C

Q.32 The building crack shown in the figure is a _____ crack.

Identify the type of crack



Ans A). toothed

B). vertical

C). diagonal

D). horizontal

Correct Answer: C

Q.33 A simply supported beam of 8 m has two vertical point loads: 10 kN at 2 m from the left support, 10 kN at 6 m from the left support. Using the graphical method, what is the approximate reaction at the left support (R_A)?

Ans A). 12 kN

B). 8 kN

C). 15 kN

D). 10 kN

Correct Answer: D

Q.34 What is the primary mechanism by which a hydraulic pump moves fluid?

Ans A). By generating an electric charge to attract the fluid

B). By using thermal expansion of the fluid

C). By creating a vacuum to draw fluid in and then pressurising it

D). By using gravity to push the fluid through the system

Correct Answer: C

Q.35 For a column subjected to bending and compression, the maximum slenderness ratio as per IS 800:2007 is:

Ans A). 180

B). 200

C). 300

D). 250

Correct Answer: A

Q.36 Which type of excavation is used for laying large pipelines?

Ans A). Muck excavation

B). Rock excavation

C). Trench excavation

D). Open excavation

Correct Answer: C

Q.37 Which type of wall is designed to resist lateral forces, like wind or earthquakes?

Ans A). Cavity wall

B). Partition wall

C). Load-bearing wall

D). Shear wall

Correct Answer: D

Q.38 For a built-up column with lacing, what percentage of the axial load is considered as the transverse shear force (V_t) that the lacing system must resist?

Ans A). 1.5%

B). 2.5%

C). 2.0%

D). 3.0%

Correct Answer: B

Q.39 Which of the following statements about friction is correct?

Ans A). Kinetic friction is greater than static friction.

B). Friction is independent of the surface area in contact.

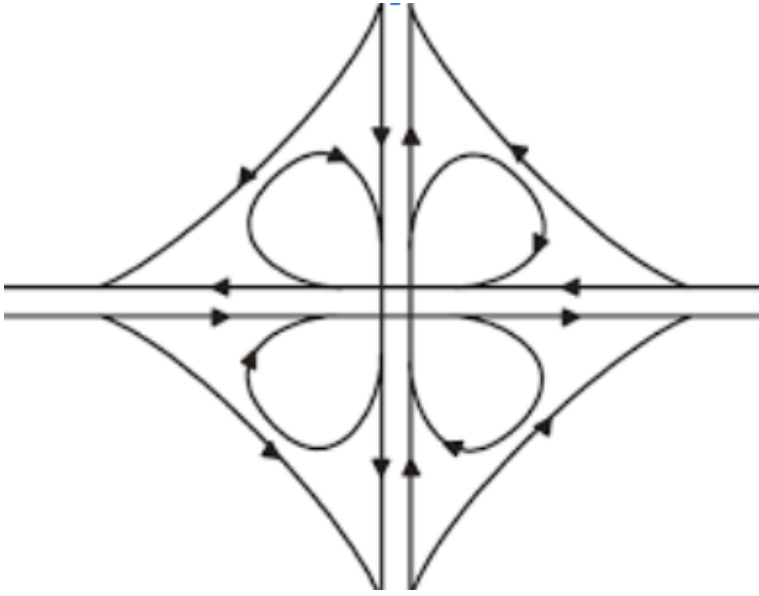
C). Friction force does not depend on the nature of surfaces.

D). Friction does not depend on the normal reaction.

Correct Answer: B

Q.40	When two walls meet at right angles, which of the following bonds is generally used to maintain structural strength?			
Ans	A). Flemish bond	B). Header bond	C). Stretcher bond	D). English bond Correct Answer: D
Q.41	The collar beam in a collar beam roof performs which of the following functions?			
Ans	A). It supports the ridge beam.	B). It forms an extension to the eaves.	C). It ties the wall plates together.	D). It prevents rafters from bending. Correct Answer: D
Q.42	Which of the following best explains why rail transport is preferred over road transport for bulk goods movement?			
Ans	A). Rail transport requires more energy due to heavier infrastructure. B). Rail transport is only suitable for short-distance bulk movement. C). Rail transport require less energy to haul a unit load over a unit distance. D). Rail transport is always faster than road transport for all types of goods. Correct Answer: C			
Q.43	Which of the following waterproofing methods is often used for external surfaces of concrete structures?			
Ans	A). Root barriers	B). Cavity wall construction	C). Membrane waterproofing	D). Integral waterproofing Correct Answer: C
Q.44	Cracks in buildings due to atmospheric drying of moisture in building materials cause:			
Ans	A). structural cracks	B). shrinkage cracks	C). thermal cracks	D). settlement cracks Correct Answer: B
Q.45	The plinth area of a building is measured at which level?			
Ans	A). Ground floor level	B). Top of the damp-proof course	C). Mid-level of the foundation	D). Top of the plinth Correct Answer: A
Q.46	In the plastering of surfaces with three coats, the second coat of plaster applied is also known as ____.			
Ans	A). under coat	B). rendering coat	C). setting coat	D). floating coat Correct Answer: D
Q.47	Which of the following is the primary reason for adopting deep foundations over shallow foundations?			
Ans	A). Poor soil bearing capacity at shallow depths B). Faster construction speed C). High water table D). Low construction cost Correct Answer: A			
Q.48	What is the correct method to determine the moment of inertia of a symmetrical T-section about its centroidal axis?			
Ans	A). Consider only the moment of inertia of the flange, as it dominates the shape B). Assume it behaves as a solid rectangular section of the same overall dimensions C). Use the perpendicular axis theorem directly D). Use the parallel axis theorem to sum the moments of inertia of the flange and web Correct Answer: D			
Q.49	The sewerage system in which the society's waste is carried in buckets or carts is called:			
Ans	A). hygienic system	B). water carriage system	C). conservancy system	D). bucket system Correct Answer: C
Q.50	The contract in which the contractor needs to complete the work within a fixed sum and fixed time, irrespective of the qualities of different items, is:			
Ans	A). Fixed contract	B). Lump sum contract	C). Item rate contract	D). Schedule contract Correct Answer: B

Q.51 The given figure shows which type of interchanges under grade separated intersection?



Ans A). Full coverage leaf B). Rotary C). Partial coverage leaf D). Diamond **Correct Answer: A**

Q.52 According to IS 456:2000, the maximum compressive strain in concrete under axial loading at the limit state of collapse is specified as _____.

Ans A). 0.002 B). 0.0015 C). 0.0025 D). 0.003 **Correct Answer: A**

Q.53 What is the primary function of a fish plate in rail joints?

Ans A). To reduce track curvature B). To provide better track drainage C). To join two rails together D). To hold the sleepers together

Correct Answer: C

Q.54 What is the optimum moisture content (OMC) range for compacting cohesive soils, as per IS 2720 (Part 8) - 1983?

Ans A). 10–14% B). 12–16% C). 8–12% D). 15–20% **Correct Answer: B**

Q.55 The Moment of Resistance (M_R) in a beam is defined as:

Ans A). the internal moment developed due to bending stresses B). the product of shear force and bending moment
C). the sum of shear forces in the beam D). the external moment applied to the beam

Correct Answer: A

Q.56 What is the fire point test conducted on Bitumen also known as?

Ans A). Softening point test B). Penetration test C). Pensky Marten test D). Flash point test **Correct Answer: C**

Q.57 What is air seasoning for timber also called?

Ans A). Natural seasoning B). Controlled seasoning C). Kiln seasoning D). Artificial seasoning **Correct Answer: A**

Q.58 ಒಂದು ಕಟ್ಟಡದ ಮುಂಭಾಗದ ಮತ್ತು ಬದಿಯ ರೂಪವನ್ನು ತೋರಿಸುವ ಡ್ರಾಯಿಂಗ್ ಅನ್ನು _____ ಎಂದು ಕರೆಯುತ್ತಾರೆ.

Ans A). ಬಿಲ್ಡಿಂಗ್ ಎಲೆವೇಶನ್ B). ಏರಿಯಲ್ ವ್ಯೂ C). ಬಿಲ್ಡಿಂಗ್ ಪ್ಲಾನ್ D). ಬಿಲ್ಡಿಂಗ್ ಸೆಕ್ಷನ್ **Correct Answer: A**

Q.59 Which of the following plastics is used in fiber-reinforced composites for bridges and structural applications?

Ans A). Acrylic B). Acrylonitrile Butadiene Styrene C). Epoxy resin D). Nylon **Correct Answer: C**

Q.60 ಫೌಂಜ್‌ನಲ್ಲಿನ ಬಾಗುವಿಕೆಯ ಒತ್ತಡಗಳನ್ನು ಮಾರ್ಪಡಿಸುವ ಶೀಯರ್ ಸ್ಟ್ರೇನ್‌ಗಳಿಂದಾಗಿ ಯಾವ ವಿದ್ಯಮಾನವು ಸಂಭವಿಸುತ್ತದೆ ಮತ್ತು ವಿಭಾಗಗಳು ಡೊಂಕಾಗಲು (warp) ಕಾರಣವಾಗುತ್ತದೆ?

Ans A). ಲೋಕಲ್ ಬಕ್ಲಿಂಗ್ B). ವೆಬ್ ಕ್ರಿಪ್ಪಿಂಗ್ C). ಟೋರ್ಷನ್‌ಲ್ ಇನ್ ಸ್ಟೆಬಿಲಿಟಿ D). ಶೀಯರ್ ಲ್ಯಾನ್ **Correct Answer: D**

Q.61 Which of the following statements is/are correct about the variation of magnetic declination?

Statement I: Magnetic declination is more at magnetic poles and less at equator.

Statement II: Magnetic declination is more in the summer than in the winter.

Statement III: Magnetic declination is more at night and less in the day.

Ans A). Statements I and II only B). Statement I only C). Statement II only D). Statements II and III only

Correct Answer: B

Q.62 A plan that has detailed drawings of building foundation is known as _____.

Ans A). foundation plan B). basement plan C). ground level plan D). survey plan

Correct Answer: A

Q.63 Clay possesses the highest strength in which of the following conditions?

Ans A). When heated to very high temperatures, up to redness B). When at liquid limit C). When with kaolinite at room temperatures

D). When at shrinkage limit

Correct Answer: A

Q.64 In which of the following types of estimates for buildings will the running meter cost of walls be required?

Ans A). Plinth Area method B). Cubical method C). Approximate quantity method D). Linear method

Correct Answer: C

Q.65 Which of the following options is used to enhance the alignment and strength of adjoining stones in stone masonry?

Ans A). Flush joint B). Key joint C). Recessed joint D). Dowel joint

Correct Answer: D

Q.66 Which type of support allows only rotational movement but resists both horizontal and vertical forces?

Ans A). Roller support B). Fixed support C). Free support D). Pinned support

Correct Answer: D

Q.67 Even when the normal forces are reduced to zero, some part of shear strength is still left on the soil. This strength is due to:

Ans A). true cohesion B). interlocking friction C). sliding friction D). apparent cohesion

Correct Answer: A

Q.68 Efflorescence on plastered surface causes which of the following effects to appear?

Ans A). Rust stains or patches B). Growth patches of organic matter C). Oozing out of a viscous liquid D). Whitish crystalline substance

Correct Answer: D

Q.69 What is the initial setting time of Portland-Pozzolana Cement when tested by the Vicat apparatus method as described in IS 4031 (Part 5):1988?

Ans A). 60 minutes B). 30 minutes C). 40 minutes D). 10 minutes

Correct Answer: B

Q.70 Which of the following types of junction is formed when two walls intersect at an acute angle?

Ans A). Skew junction B). Mitred junction C). Butt junction D). Lap junction

Correct Answer: B

Q.71 Which of the following types of glass fibre is most commonly used for reinforcement in construction?

Ans A). E - glass B). A - glass C). S - glass D). C - glass

Correct Answer: A

Q.72 In structural applications, what is a potential drawback of using High Performance Concrete?

Ans A). Lower bond strength with reinforcement B). Difficulty in achieving proper compaction due to high stiffness
C). Increased susceptibility to chemical reactions in marine environments D). Lower strength compared to conventional concrete

Correct Answer: B

Q.73 Drawing files generated in the AutoCAD software have which of the following file extensions?

Ans A). .XML B). .DWG C). .PSD D). .DOC

Correct Answer: B

Q.74 The plastic limit of a soil is 20% and its liquid limit is 50%. If its flow index is 30%, find the value of the toughness index of the soil.				
Ans A).	1	B). 0.5	C). 3	D). 1.5
Correct Answer: A				
Q.75 The ratio of total covered area of all floors to the area of the plot on which the building is to be built is known as:				
Ans A).	ground coverage	B). floor area ratio	C). built up area %	D). carpet area %
Correct Answer: B				
Q.76 Which of the following factors determines the frequency of a concrete vibrator?				
Ans A).	The ambient temperature	B). The type of cement used	C). The water-cement ratio	D). The size of the aggregate in the mix
Correct Answer: C				
Q.77 Which type of soil is commonly used for the core of an embankment to minimise seepage?				
Ans A).	Clay	B). Sand	C). Silty sand	D). Gravel
Correct Answer: A				
Q.78 In structural analysis, Clapeyron's Theorem of Three Moments is primarily used to:				
Ans A).	analyse the shear forces in a cantilever beam	B). calculate the bending moments at the supports of a continuous beam		
C).	determine the deflection at the midpoint of a simply supported beam	D). evaluate the torsional stresses in circular shaft		
Correct Answer: B				
Q.79 The drawing that gives information about the placement of rooms in a building along with their length and width measurements is known as _____.				
Ans A).	building elevation	B). building plan	C). building section	D). aerial view
Correct Answer: B				
Q.80 Why is the Slope-Deflection Method considered more efficient than the Force Method for analysing indeterminate structures?				
Ans A).	It cannot be used for beams and frames	B). It involves fewer equations and unknowns, making it easier to solve		
C).	It requires writing compatibility equations for unknown forces	D). It is limited to structures with low degrees of indeterminacy		
Correct Answer: B				
Q.81 A good average value of the crushing strength of aggregates, suitable for concrete, is _____.				
Ans A).	100-300 MPa	B). 80-100 MPa	C). 60-80 MPa	D). 40-60 MPa
Correct Answer: A				
Q.82 Bitumen is used in the all of the following, EXCEPT:				
Ans A).	waterproofing	B). damp proofing	C). turfing	D). roofing
Correct Answer: C				
Q.83 In RCC beams, which type of reinforcement is provided to resist shear?				
Ans A).	Compression bars	B). Stirrups	C). Lateral ties	D). Longitudinal bars
Correct Answer: B				
Q.84 Units of measurement for a drawing in AutoCAD can be set up using the command:				
Ans A).	Scale	B). Grid	C). Limits	D). Units
Correct Answer: D				
Q.85 As per IS 800: 2007, which type of beam does NOT need a lateral torsional buckling check?				
Ans A).	Plate girders	B). Beams bending about their major axis with λ_{LT} more than 0.4	C). Hollow rectangular or tubular sections	
D).	I-section beams with a long span			
Correct Answer: C				
Q.86 Which of the following correctly represents the ultimate tensile force (T_u) in the tensile reinforcement (A_s) of a singly reinforced beam at the ultimate limit state of flexure, considering the characteristic yield strength of steel (f_y)?				
Ans A).	$T_u = 0.5 f_y A_s$	B). $T_u = 0.87 f_y A_s$	C). $T_u = 0.67 f_y A_s$	D). $T_u = f_y A_s$
Correct Answer: B				

Q.87 The egg-shaped sewer is placed, such that:

- Ans** A). the velocity of flow is always lesser than the velocity of flow in hydraulically equivalent circular sewer
B). the larger base has to support the weight of the upper smaller section
C). the smaller base has to support the weight of the upper broader section
D). the base and upper section has the same area and the middle section has large area

Correct Answer: C

Q.88 As per IS 1200 Part I, the measurement of:

- Ans** A). length shall be done to nearest 0.01 m, areas to nearest 0.01 m^2 and volume to nearest 0.01 m^3
B). length shall be done to nearest 0.01 m, areas to nearest 0.01 m^2 and volume to nearest 0.001 m^3
C). length shall be done to nearest 1 m, areas to nearest 1 m^2 and volume to nearest 1 m^3
D). length shall be done to nearest 0.1 cm, areas to nearest 0.1 cm^2 and volume to nearest 0.1 cm^3

Correct Answer: A

Q.89 Which prefabricated element is structurally designed to resist lateral loads in high-rise buildings?

- Ans** A). Shear wall panel B). Precast column C). Hollow core slab D). Lintel beam

Correct Answer: A

Q.90 Which type of wall is primarily used for partitioning internal spaces?

- Ans** A). Load-bearing wall B). Cavity wall C). Shear wall D). Partition wall

Correct Answer: D

Q.91 Which of the following statements is correct with respect to the difference between hydrostatics and hydrodynamics?

- Ans** A). Hydrostatics deals with only compressible fluids, while hydrodynamics deals with only incompressible fluids.
B). Hydrostatics studies fluid at rest, while hydrodynamics studies fluid in motion.
C). Hydrostatics focuses on turbulent flow, while hydrodynamics focuses on laminar flow.
D). Hydrostatics ignores pressure effects, while hydrodynamics considers them.

Correct Answer: B

Q.92 Which type of chemical is typically used in chemical rebar anchoring?

- Ans** A). Cement slurry B). Epoxy resin C). Lime mortar D). Acrylic paint

Correct Answer: B

Q.93 If A_v is the area of voids in cross-section and A is the total area of cross-section, the relation between seepage velocity (v_s) and superficial velocity (v) is correctly represented as:

- Ans** A). $v_s = AvA_v$ B). $v_s = A_v v/A$ C). $v = Av_s A_v$ D). $v = A_v v_s/A$

Correct Answer: D

Q.94 In a traverse survey, if the direction of the progress of the survey is _____, then the angles measured in the clockwise direction are directly the _____ angles.

- Ans** A). counterclockwise; excluded B). counterclockwise; included C). clockwise; excluded D). clockwise; included

Correct Answer: B

Q.95 What is the primary difference between a lift and an elevator in building terminology?

- Ans** A). There is no functional difference. B). Lifts are vertical; elevators are inclined. C). Lifts are for goods; elevators are for passengers.
D). Lifts are manual; elevators are automatic.

Correct Answer: A

Q.96 Which of the following factors does NOT affect the moment of inertia of a plane lamina?

- Ans** A). The axis about which it is rotating B). The angular velocity of rotation C). The shape and size of the body D). The mass of the body

Correct Answer: B

Q.97 According to the Parallelogram Law of Forces, the resultant of two forces acting at an angle to each other is represented by:

- Ans** A). the perpendicular bisector of the two forces B). the difference of their magnitudes C). the sum of their magnitudes
D). the diagonal of the parallelogram formed by the two forces

Correct Answer: D

Q.98 The combined effects of the earth's curvature and refraction is eliminated in _____.

- Ans** A). longitudinal sectioning B). profile levelling C). cross sectioning D). reciprocal levelling

Correct Answer: D

Q.99 Which structural element is placed directly above a window to bear the load of the wall above?

Ans A). Lintel

B). Cornice

C). Chejja

D). Sill

Correct Answer: A

Q.100 ಯಾವ ಪ್ಲಾಸ್ಟರ್ ಫಿನಿಷ್‌ನಲ್ಲಿ ಸೂಕ್ತ ಸಲಕರಣೆಗಳನ್ನು ಬಳಸಿ ಪ್ಲಾಸ್ಟರ್‌ನ ಅಂತಿಮ ಲೇಪನದ ಮೇಲೆ ಆಲಂಕಾರಿಕ ಪ್ಯಾಟರ್ನ್‌ಗಳು ಅಥವಾ ಟೆಕ್ಸ್ಟರ್‌ನಿಂದ ಕೂಡಿದ ಮೇಲ್ಮೈ (ಸರ್ಫೇಸ್) ಗಳನ್ನು ರಚಿಸಲಾಗುತ್ತದೆ?

Ans A). ಸ್ಮೂತ್ ಕಾಸ್ಟ್ ಫಿನಿಷ್

B). ರಫ್ ಕಾಸ್ಟ್ ಫಿನಿಷ್

C). ಸ್ಪ್ರಾಟರ್ ಡ್ರಾಪ್ ಫಿನಿಷ್

D). ಟೆಕ್ಸ್ಟರ್ಡ್ ಫಿನಿಷ್

Correct Answer: D

Maths By Gagan Pratap Sir



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रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Civil and Allied Engineering

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 Who among the following inaugurated the 38th National Games held in Dehradun in January 2025?

Ans A). Droupadi Murmu B). Pushkar Singh Dhami C). Narendra Modi D). Anurag Thakur

Correct Answer: C

Q.2 The fine powder that is obtained from the modified and recycled form of plastic is called _____.

Ans A). polyethylene B). polystyrene C). polyblend D). polythene

Correct Answer: C

Q.3 Which of the following is a characteristic difference between colloids and true solutions?

Ans A). True solutions exhibit Brownian motion, but colloids do not. B). True solutions show the Tyndall effect, but colloids do not.
C). True solutions have visible solute particles, whereas colloids have invisible dispersed particles.
D). True solutions have a single-phase system, whereas colloids have a two-phase system.

Correct Answer: D

Q.4 What is the shortcut key to start a slideshow from the beginning?

Ans A). Ctrl + P B). F5 C). Shift + F5 D). Alt + Tab

Correct Answer: B

Q.5 Which of the following is NOT a source of release of smokestacks?

Ans A). Thermal power plants B). Rivers C). Industries D). Smelters

Correct Answer: B

Q.6 What is India's global military ranking in the 2025 Global Firepower (GFP) index?

Ans A). 4th B). 2nd C). 5th D). 3rd

Correct Answer: A

Q.7 In an electric circuit, what is the correct way to connect an ammeter?

Ans A). In series with the component B). In parallel with the component C). In either series or parallel D). In parallel with the source

Correct Answer: A

Q.8 Which state of matter shows the highest expansion when temperature is increased?

Ans A). Solids B). Liquids C). Gases D). Plasma

Correct Answer: C

Q.9 What is the primary purpose of using a firewall on a Personal Computer?

Ans A). To clean up temporary files B). To increase storage space C). To speed up internet connectivity
D). To block unauthorised access and protect the computer

Correct Answer: D

Q.10 If an object is dropped from rest, what will be its velocity after 15 seconds? (g = 9.8 m/s²)

Ans A). 147 m/s B). 145 m/s C). 149 m/s D). 143 m/s

Correct Answer: A

Q.11 Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?

Ans A). Microsoft B). Google C). Amazon D). Meta

Correct Answer: D

Q.12 What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?

Ans A). 20% of Lok Sabha strength B). 15% of Lok Sabha strength C). 10% of Lok Sabha strength D). 12% of Lok Sabha strength

Correct Answer: B

Q.13 Which of the following is the correct way to insert a new column in a spreadsheet?

Ans A). Go to Home > Insert > Insert Sheet Columns. B). Go to File > New > Column. C). Press Ctrl + X and then Insert.
D). Use Ctrl + Z to insert a column.

Correct Answer: A

Q.14 What was the main objective of the Extremists during the Indian National Movement?

Ans A). To expand the legislative councils B). To bring social reforms C). To promote British goods in India
D). To attain complete independence (Swaraj)

Correct Answer: D

Q.15 According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?

Ans A). 15.5% B). 20% C). 25.7% D). 27.5%

Correct Answer: C

Q.16 Inertia depends on which property of an object?

Ans A). Acceleration B). Velocity C). Shape D). Mass

Correct Answer: D

Q.17 Which of the following is NOT toxic to non-target organisms in the soil?

Ans A). Organic fertilisers B). Herbicides C). Pesticides D). Fungicides

Correct Answer: A

Q.18 What is the first step to securing ones smartphone or tablet?

Ans A). Setting a password/PIN-protected lock screen B). Installing more apps C). Turning off mobile data D). Using only free Wi-Fi networks

Correct Answer: A

Q.19 The phenomenon of multiple echoes due to repeated reflections is called _____.

Ans A). diffraction B). resonance C). reverberation D). refraction

Correct Answer: C

Q.20 What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?

Ans A). Opens the Find and Replace dialog B). Toggles between absolute and relative references C). Repeats the last action
D). Refreshes the worksheet

Correct Answer: B

Q.21 The glass panel used in greenhouses is known to retain _____.

Ans A). heat B). humidity C). pH D). rainfall

Correct Answer: A

Q.22 Which of the following CANNOT be considered as a measure to control global warming?

Ans A). Causing deforestation B). Reduction in emission of greenhouse gases C). Efficiently using energy D). Cutting down use of fossil fuel

Correct Answer: A

Q.23	The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.			
Ans	A). chloride	B). phosphate	C). bacterium	D). nitrate
Correct Answer: C				
Q.24	Why does a bee sting cause pain and irritation?			
Ans	A). The sting injects a mild sugar solution.	B). The sting contains a strong base.	C). The sting injects methanoic acid.	D). The sting releases carbon dioxide gas.
Correct Answer: C				
Q.25	What is the purpose of the Collation option in the Print settings?			
Ans	A). To adjust the page orientation	B). To select a custom print range	C). To change the printer selection	D). To print all the pages of a document as a set
Correct Answer: D				
Q.26	The Rudra Veena is predominantly associated with which genre of Hindustani music?			
Ans	A). Ghazal	B). Khayal	C). Thumri	D). Dhrupad
Correct Answer: D				
Q.27	If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.			
Ans	A). Cc	B). Subject	C). Bcc	D). To
Correct Answer: A				
Q.28	If the absolute refractive index of a medium is less than 1, it means _____.			
Ans	A). the medium absorbs all light	B). light travels slower in that medium than in vacuum	C). light travels faster in that medium than in vacuum	D). the medium is a perfect reflector
Correct Answer: C				
Q.29	Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?			
Ans	A). Preamble	B). Fundamental Duties	C). Directive Principles of State Policy	D). Fundamental Rights
Correct Answer: C				
Q.30	Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?			
Ans	A). $\text{Al}_2(\text{SO}_4)_3$	B). $\text{Al}_3(\text{SO}_4)_2$	C). $\text{Al}(\text{SO}_4)_3$	D). Al_2SO_4
Correct Answer: A				
Q.31	Which official in the Gupta administration was responsible for peace and war matters?			
Ans	A). Mahadandanayaka	B). Sandhi-Vigrahika	C). Mahapratihara	D). Vishayapati
Correct Answer: B				
Q.32	What is the net force acting on an object if balanced forces are applied?			
Ans	A). Infinite	B). Equal to acceleration	C). Zero	D). Equal to the mass of the object
Correct Answer: C				
Q.33	Which of the following is NOT a component of a CPU?			
Ans	A). Hard Disk	B). Cache Memory	C). Control Unit (CU)	D). Arithmetic Logic Unit (ALU)
Correct Answer: A				
Q.34	Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?			
Ans	A). Article 53	B). Article 77	C). Article 88	D). Article 78
Correct Answer: C				
Q.35	Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?			
Ans	A). New Delhi	B). Chennai	C). Mumbai	D). Kolkata
Correct Answer: A				
Q.36	Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.			
Ans	A). $\text{Mg}_2(\text{PO}_4)_3$	B). $\text{Mg}_3(\text{PO}_4)_2$	C). $\text{Mg}(\text{PO}_4)_3$	D). MgPO_4
Correct Answer: B				
Q.37	Which of the following states is NOT covered under the Atal Bhujal Yojana?			
Ans	A). Maharashtra	B). Uttar Pradesh	C). Rajasthan	D). Jharkhand
Correct Answer: D				
Q.38	What does PCB stand for?			
Ans	A). Processing Circuit Board	B). Primary Control Board	C). Peripheral Connection Bus	D). Printed Circuit Board
Correct Answer: D				

Q.39	Which of the following correctly explains why clothes dry faster on a windy day?			
Ans	A). Wind decreases the temperature of the water molecules.	B). Wind reduces the surface area of the clothes.		
	C). Wind increases the humidity around the clothes.	D). Wind removes the water vapour from the clothes' surroundings.		Correct Answer: D
Q.40	In which of the following regions the Himalayas has the greatest width?			
Ans	A). Himachal Pradesh	B). Arunachal Pradesh	C). Kashmir	D). Sikkim
				Correct Answer: C
Q.41	The practice of Jhum cultivation is prevalent in the _____.			
Ans	A). South east	B). North east	C). South west	D). North west
				Correct Answer: B
Q.42	The energy that is derived from the use of radioactive isotopes is termed as _____.			
Ans	A). solar energy	B). geothermal energy	C). thermal energy	D). nuclear energy
				Correct Answer: D
Q.43	What is the approximate pH of a neutral salt solution?			
Ans	A). Depends on the temperature	B). Equal to 7	C). More than 7	D). Less than 7
				Correct Answer: B
Q.44	Which defect of vision occurs due to the weakening of ciliary muscles with age?			
Ans	A). Presbyopia	B). Astigmatism	C). Hypermetropia	D). Myopia
				Correct Answer: A
Q.45	The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?			
Ans	A). 2008	B). 2005	C). 2014	D). 2015
				Correct Answer: D
Q.46	The Industrial Policy Resolution of 1956 categorised industries into how many groups?			
Ans	A). Nine	B). Seven	C). Three	D). Five
				Correct Answer: C
Q.47	What happens when a computer is put into Sleep mode?			
Ans	A). It stores data on the hard drive and powers off.	B). It keeps the session active in RAM while using minimal power.		
	C). It shuts down completely.	D). It restarts automatically after a few minutes.		Correct Answer: B
Q.48	What happens when an acid reacts with a metal oxide?			
Ans	A). A salt and water are formed.	B). Only water is formed.	C). A salt and hydrogen gas are formed.	D). Only salt is formed.
				Correct Answer: A
Q.49	The main use of chlorofluorocarbons is in _____.			
Ans	A). refrigerants	B). smog	C). chimneys	D). vehicles
				Correct Answer: A
Q.50	The maximum sound is generated _____.			
Ans	A). from industrial smoke	B). from vehicular emissions	C). by the take off of a jet plane	D). from house chimneys
				Correct Answer: C

Q.1	Which type of footing is preferred for closely spaced columns in a row?			
Ans	A). Continuous footing	B). Combined footing	C). Strap footing	D). Isolated footing
				Correct Answer: A
Q.2	Which of the following sensors on board of the Indian Remote Sensing satellites is capable of monitoring dynamic phenomenon such as forest fire?			
Ans	A). PAN	B). LISS I	C). WIFS	D). MOS
				Correct Answer: C
Q.3	Which of the following statements about traffic marking classification is INCORRECT?			
Ans	A). Longitudinal markings regulate lane discipline and provide guidance to drivers.			
	B). Transverse markings include stop lines, pedestrian crossings and yield lines.			
	C). Yellow markings are exclusively used for regulatory purposes, while white markings are only used for guidance.			
	D). Object markings are used to indicate fixed roadside obstacles like medians and bridge piers.			Correct Answer: C

Q.4	Which type of footing is most commonly used when a column is placed near a property boundary, restricting footing extension on one side?			
Ans	A). Strap footing	B). Isolated footing	C). Combined footing	D). Mat footing
	Correct Answer: A			
Q.5	A Location Plan is also called a:			
Ans	A). Key Plan	B). Survey Plan	C). Site Plan	D). Master Plan
	Correct Answer: A			
Q.6	The term 'eccentric footing' refers to a footing:			
Ans	A). placed off-centre relative to the column B). shared by multiple columns C). used for machine foundations D). having a circular shape			
	Correct Answer: A			
Q.7	Which of the following boundary conditions for a column results in the lowest effective length factor (K)?			
Ans	A). Both ends fixed B). One end fixed and the other free C). One end fixed and the other pinned D). Both ends pinned			
	Correct Answer: A			
Q.8	According to the Bureau of Indian Standards, IS 12894:2002, clay and silt in sand for pulverized fuel-ash lime bricks should preferably be:			
Ans	A). 11-15%	B). 16-20%	C). 6-10%	D). 0-5%
	Correct Answer: D			
Q.9	Which of the following is NOT a desirable characteristic of a good formwork?			
Ans	A). Should provide a smooth surface finish B). Should be easily handled and removed C). Should be rigid and strong D). Should be highly absorbent to absorb excess water			
	Correct Answer: D			
Q.10	Which type of window sill is best suited for areas prone to heavy rainfall?			
Ans	A). Sloped sill	B). Vertical sill	C). Horizontal sill	D). Flat sill
	Correct Answer: A			
Q.11	A finish of rich concrete made with very hard and tough quality coarse aggregate such as granite, basalt, quartzite, etc. is known as ____ finish.			
Ans	A). ceramic	B). terrazzo	C). monolithic	D). granolithic
	Correct Answer: D			
Q.12	In a reinforced concrete beam, what should the spacing of vertical stirrups be in terms of effective depth, to ensure adequate shear reinforcement as per IS 456:2000?			
Ans	A). It should not exceed 0.75 times the effective depth (d) of the beam. B). It should not exceed twice the effective depth (d) of the beam. C). It should not exceed the effective depth (d) of the beam. D). It should not exceed 1.5 times the effective depth (d) of the beam.			
	Correct Answer: A			
Q.13	A building section drawing does NOT give which of the following information?			
Ans	A). Height of the structure B). Foundation used for the structure C). Length and width of the rooms D). Type of materials used for the structure			
	Correct Answer: C			
Q.14	Which keyboard shortcut is used to toggle wireframe mode in 3ds Max?			
Ans	A). F3	B). Ctrl + W	C). W	D). Shift + X
	Correct Answer: A			
Q.15	In the three envelope system of tender submission, the first envelope contains:			
Ans	A). technical bid B). documents related to eligibility criteria C). financial bid D). documents related to estimation of construction work			
	Correct Answer: B			
Q.16	For a column with one end fixed and the other end hinged, what is the effective length factor K?			
Ans	A). 0.5	B). 1.0	C). 2.0	D). 0.7
	Correct Answer: D			
Q.17	Which of the following components of the Autodesk Civil 3D 2024 user interface provides access to file-related commands such as creating, opening, printing, exporting and publishing files?			
Ans	A). Command Line	B). Toolspace Window	C). Application Menu	D). Ribbon
	Correct Answer: C			

Q.18	If the width of a rectangular notch is doubled, then the discharge will _____.			
Ans	A). double	B). become half	C). remain the same	D). increase by three times
Correct Answer: A				
Q.19	Expanded polystyrene (EPS) is commonly used in the construction of:			
Ans	A). reinforced concrete	B). structural steel	C). thermal insulation panels	D). electrical wiring
Correct Answer: C				
Q.20	Which of the following is a major combustible component of biogas?			
Ans	A). Carbon dioxide	B). Hydrogen sulphide	C). Methane	D). Butane
Correct Answer: C				
Q.21	A light pole is held in place by three tensioned cables forming angles of 60°, 75°, and 45° with each other at a common point. Assuming equilibrium, which theorem helps to determine the tensions in the cables?			
Ans	A). Varignon's theorem	B). Parallel axis theorem	C). Lami's theorem	D). Newton's second law
Correct Answer: C				
Q.22	What are beams fabricated using rolled plates called?			
Ans	A). Plate girders	B). Castellated beams	C). Hybrid beams	D). Composite beams
Correct Answer: A				
Q.23	Why is proper drainage essential for subgrade soil in highway pavements?			
Ans	A). To prevent moisture retention and strength reduction	B). To reduce erosion	C). To increase soil temperature	D). To allow easy mixing with cement
Correct Answer: A				
Q.24	Which of the following statements is true regarding a fixed beam?			
Ans	A). The deflection and slope at the fixed end are zero.	B). A fixed beam is always supported on more than two supports.	C). A fixed beam does not experience end moments	D). The deflection at the fixed ends is zero, but the slope is not zero.
Correct Answer: A				
Q.25	Which of the following is NOT a type of drilling equipment?			
Ans	A). Truck mounted drill	B). Jack hammer	C). Drifters	D). Excavator
Correct Answer: D				
Q.26	Which method is most commonly used for placing concrete in high-rise buildings?			
Ans	A). Direct placement using wheelbarrows	B). Hand mixing and placing	C). Pouring concrete from a height without any control	D). Pumping method
Correct Answer: D				
Q.27	Which of the following statements about manometric head is correct?			
Ans	A). It is the effective head that accounts for losses.	B). It represents only the suction head of a pump.	C). It does not include friction losses.	D). It is a constant value for all pumps.
Correct Answer: A				
Q.28	The correct relationship between Modulus of Elasticity (E) and Shear Modulus (G) is given by:			
Ans	A). $E = 3G(1-2\mu)$	B). $E = G(1+\mu)$	C). $E = G(1+2\mu)$	D). $E = 2G(1+\mu)$
Correct Answer: D				
Q.29	What is the main purpose of applying grade compensation on a horizontal curve?			
Ans	A). To increase the tractive effort of vehicles	B). To make the road surface smoother	C). To reduce the frictional resistance due to the curve and gradient	D). To allow vehicles to travel at higher speeds on curves
Correct Answer: C				
Q.30	With respect to Darcy's law, which of the following heads are ignored for soil flow problems?			
Ans	A). Hydraulic head	B). Datum head	C). Velocity head	D). Pressure head
Correct Answer: C				
Q.31	Which of the following bonds is considered the strongest and most suitable for load-bearing walls?			
Ans	A). Stretcher bond	B). English bond	C). Flemish bond	D). Header bond
Correct Answer: B				
Q.32	If the length, width and height of the wall is 7 m, 0.3 m, 3 m, respectively, then the total quantity of brickwork required will be:			
Ans	A). 21 m ²	B). 6.3 m ³	C). 0.9 m ²	D). 12.6 m ³
Correct Answer: B				

Q.33 What is the main purpose of adding steel fibres to concrete?

- Ans A). To reduce the need for cement B). To increase the water cement ratio C). To increase the weight of concrete
D). To improve its tensile strength and crack resistance

Correct Answer: D

Q.34 According to Terzaghi's bearing capacity theory, the angle of shear failure planes of the Rankines passive zones of linear shear, with the horizontal is _____. (where ϕ = angle of internal friction)

- Ans A). $45 - \phi/2$ B). 45 C). $45 + \phi/2$ D). $\phi/2$

Correct Answer: A

Q.35 Which of the following causes settlement of foundations due to water level fluctuation?

- Ans A). Vibration due to blasting B). Seasonal swelling and shrinking of expansive soils C). Adjacent excavation
D). Slipping of ground strata on sloping sites.

Correct Answer: B

Q.36 The vertical downward movement of a structure's base is known as _____.

- Ans A). Deformation B). Deflection C). Depression D). Settlement

Correct Answer: D

Q.37 Which of the following represents an engineer's scale?

- Ans A). 1 in 10 B). 1/5000 C). 1 cm = 10 m D). 2%

Correct Answer: C

Q.38 The devices for harnessing solar energy are usually coated with:

- Ans A). anti-reflective coating B). anti-glare coating C). carbide coating D). titanium oxide coating

Correct Answer: A

Q.39 Pointing is a process carried out in:

- Ans A). stucco walls B). plastered masonry walls C). exposed masonry walls D). wattle and daub walls

Correct Answer: C

Q.40 Escalator balustrades are primarily designed to:

- Ans A). protect users from falling B). support the weight of steps C). improve aesthetics D). house control panels

Correct Answer: A

Q.41 The aggregate crushing value in accordance with IS 2386 Part IV, 1963, shall not exceed _____ for concrete for wearing surfaces such as runways, roads and pavements.

- Ans A). 35% B). 45% C). 30% D). 50%

Correct Answer: C

Q.42 As per general conditions of the contract, the security money deposited by the contractor is:

- Ans A). 20% of the estimated cost B). 10% of the estimated cost C). 2% of the estimated cost D). 5% of the estimated cost

Correct Answer: B

Q.43 Where is the centre of gravity of a solid cone located?

- Ans A). At a height $\frac{h}{2}$ from the base along the axis B). At the geometric centre of the base C). At a height $\frac{h}{4}$ from the base along the axis

- D). At the apex of the cone

Correct Answer: C

Q.44 In polymer-modified concrete (PMC), the role of the polymer component is to:

- Ans A). increase setting time significantly B). reduce water permeability and increase flexibility C). reduce strength and durability
D). increase brittleness

Correct Answer: B

Q.45 What is the function of the 'Layer Manager' in Autodesk 3ds Max?

- Ans A). To control object visibility and manage scene organisation B). To assign materials to object C). To group objects together
D). To add cameras to the scene

Correct Answer: A

Q.46 Select the pair in which the words present the same relationship to each other as the words of the given pair.

Approximate quantity estimate : Running meter length : : Cube rate estimate :

- Ans A). plinth area B). cubical content C). cost of one room D). area content

Correct Answer: B

Q.47 Which structural component of a bridge directly supports the superstructure and transfers the load to the foundation?

Ans A). Deck B). Expansion Joints C). Bearings D). Piers

Correct Answer: D

Q.48 Which type of stone masonry uses stones of uniform size and shape?

Ans A). Dry masonry B). Ashlar masonry C). Random rubble D). Coursed rubble

Correct Answer: B

Q.49 The whole circle bearing and the reduced bearing of a line will be the same when the line is in the _____ quadrant.

Ans A). north-west B). north-east C). south-east D). south-west

Correct Answer: B

Q.50 In plastering of surfaces, the process of hacking is done to ensure:

Ans A). that the surface is smooth and free from all laitance B). bonding between the surface and the plaster
C). that the materials of plaster are mixed to a correct consistency D). that the moisture content is retained in the plaster mix

Correct Answer: B

Q.51 A point on the picture plane where all the parallel lines appear to converge is called:

Ans A). station point B). vanishing point C). eye level point D). angle of vision point

Correct Answer: B

Q.52 The moment of force depends on which factors?

Ans A). The speed of rotation B). Only the distance from the point of rotation C). Both force magnitude and perpendicular distance
D). Only the magnitude of the force

Correct Answer: C

Q.53 Which of the following factors would most likely decrease surface runoff?

Ans A). Removal of vegetation B). High intensity rainfall C). Impervious surfaces like roads and buildings
D). Permeable soil and vegetation cover

Correct Answer: D

Q.54 Cracks in buildings caused by vegetation are because of:

Ans A). moisture due to transpiration of vegetation B). the removal of vegetation leading to dry conditions
C). dense branches of trees adjacent to the building D). the roots of trees very close to the building

Correct Answer: D

Q.55 What is the main advantage of a raft foundation?

Ans A). Reduces column spacing B). Settlement is uniform C). Easier to construct D). Cheaper than other foundations

Correct Answer: B

Q.56 Which of the following will NOT prevent cracks resulting from sulphate attack?

Ans A). Use of bricks containing high percentage of soluble salts B). Use of sulphate resistant cement in building works
C). Use of rich cement mortar or concrete in building works D). Provision of damp proofing to maintain dry conditions

Correct Answer: A

Q.57 Borosilicate glass is used in the manufacture of laboratory equipment and cooking utensils due to what property?

Ans A). It can withstand high temperatures. B). It can be moulded into curved shapes. C). It is a clear glass and does not obscure vision.
D). It is a strong glass and resists breakage.

Correct Answer: A

Q.58 The foundation settlement caused by lowering of water level in fine grained soils is _____.

Ans A). consolidation B). elastic compression C). erosion D). plastic compression

Correct Answer: A

Q.59 For a thin rod of length L, rotating about its center, the radius of gyration is:

Ans A). L B). $\frac{L}{\sqrt{12}}$ C). $\frac{L}{\sqrt{3}}$ D). $\frac{L}{\sqrt{2}}$

Correct Answer: B

Q.60 In the moment distribution method, how is the distribution factor (DF) for a structural member at a joint determined?

- Ans A). By multiplying the stiffness of the considered member at a joint with the total stiffness of all the members meeting at that joint
B). By dividing the total stiffness of all the members meeting at a joint by the stiffness of the considered member
C). By adding the stiffness of the considered member at a joint by the total stiffness of all the members meeting at that joint
D). By dividing the stiffness of the considered member at a joint by the total stiffness of all the members meeting at that joint

Correct Answer: D

Q.61 Soil is composed of three layers of height 'h' m each. The permeability of layers are k, 2k, and k respectively. The equivalent permeability in vertical direction is:

- Ans A). $6k/5$ B). $5/2k$ C). $2k/5$ D). $4k$

Correct Answer: A

Q.62 What is the typical ratio of cement, sand and aggregate for RCC (M20 grade)?

- Ans A). 1 : 4 : 8 B). 1 : 2 : 3 C). 1 : 3 : 6 D). 1 : 1.5 : 3

Correct Answer: D

Q.63 In a reciprocating pump, which of the following options connects the piston to the crankshaft?

- Ans A). Bearings B). Suction pipe C). Delivery pipe D). Connecting rod

Correct Answer: D

Q.64 Which type of reinforcement is called the main reinforcement in a one-way slab?

- Ans A). Top reinforcement supported along the longer span B). Top reinforcement provided in the transverse direction
C). Bottom reinforcement placed in the longer span direction D). Bottom reinforcement provided in the shorter span direction

Correct Answer: D

Q.65 Which type of scaffolding is used for painting tall buildings?

- Ans A). Suspended scaffolding B). Cantilever scaffolding C). Double scaffolding D). Single scaffolding

Correct Answer: A

Q.66 Which tool is used for breaking hard surfaces during excavation?

- Ans A). Pickaxe B). Crowbar C). Rake D). Spade

Correct Answer: A

Q.67 What is the role of impact force in the soil compaction process?

- Ans A). It increases soil permeability. B). It reduces the void spaces by sudden compression. C). It creates a uniform soil texture.
D). It helps to retain moisture.

Correct Answer: B

Q.68 The raw material for slate tile roofing is _____.

- Ans A). straw B). metal C). mud D). stone

Correct Answer: D

Q.69 Which of the following is NOT true with respect to structural cracks?

- Ans A). Pose significant risk to the stability of the building. B). Generally the damage is difficult to rectify or repair.
C). Caused by changes in moisture, etc. on building materials. D). Caused by overloading of the structural components.

Correct Answer: C

Q.70 Which of the following is the full form of PENT or PETN, an explosive used in tunneling and military applications?

- Ans A). Pentane Energy Nitrate B). Polyethylene Nitrogen Trinitrate C). Pyrotechnic Explosive Nitrogen Trigger D). Pentaerythritol Tetranitrate

Correct Answer: D

Q.71 Which of the following types of beams is used for lightly loaded beams such as roof purlins and sheeting rails?

- Ans A). Angles sections B). Castellated beams C). Box girders D). Plate girders

Correct Answer: A

Q.72 Which type of roller is most suitable for compacting cohesive soils?

- Ans A). Vibratory roller B). Smooth wheel roller C). Pneumatic roller D). Sheep foot roller

Correct Answer: D

Q.73 Which of the following is the correct expression for the bending equation in pure bending?

(Where M = Bending moment, I = Moment of inertia of the cross-section about the neutral axis, f = Bending stress at a distance y from the neutral axis, y = Distance from the neutral axis, E = Modulus of elasticity, and R = Radius of curvature of the beam)

- Ans A). $\frac{M}{I} = \frac{f}{y} = \frac{R}{E}$ B). $\frac{I}{M} = \frac{f}{y} = \frac{E}{R}$ C). $\frac{M}{I} = \frac{f}{y} = \frac{E}{R}$ D). $\frac{M}{I} = \frac{y}{f} = \frac{E}{R}$

Correct Answer: C

Q.74 A prismatic bar of length 'L' and cross-sectional area 'A' is subjected to an axial tensile load 'P'. What is the maximum stress induced in the bar?

- Ans A). $\frac{2P}{A}$ B). $\frac{P}{A}$ C). $\frac{P}{L}$ D). $\frac{P}{2A}$

Correct Answer: B

Q.75 For a cantilever beam of length 'L' subjected to a uniformly distributed load (UDL) w (kN/m) over its entire length, what is the bending moment at the fixed end?

- Ans A). $\frac{WL^2}{4}$ B). $\frac{WL}{2}$ C). $\frac{WL^2}{2}$ D). $\frac{WL}{4}$

Correct Answer: C

Q.76 Which type of scaffolding is most suitable for stone masonry work?

- Ans A). Single scaffolding B). Cantilever scaffolding C). Suspended scaffolding D). Double scaffolding

Correct Answer: D

Q.77 What is the primary load that a lintel resists?

- Ans A). Shear load B). Bending load C). Axial load D). Lateral load

Correct Answer: B

Q.78 The quantity of flooring is measured in:

- Ans A). m^3 and the length, breadth and height are taken as outside dimensions from wall to wall of superstructure
B). m^2 and the length and breadth are taken as inside dimensions from wall to wall of superstructure
C). m^2 and the length and breadth are taken as outside dimensions from wall to wall of superstructure
D). m^3 and the length, breadth and height are taken as inside dimensions from wall to wall of superstructure

Correct Answer: B

Q.79 What is the primary function of a pile cap in a deep foundation?

- Ans A). To reduce the length of piles B). To prevent water ingress into the foundation C). To distribute loads evenly among piles
D). To improve aesthetic appearance

Correct Answer: C

Q.80 If the retaining wall moves away from the backfill, the value of coefficient of Rankine's earth pressure is given by:

- Ans A). $(1 - \sin \phi)$ B). $(1 + \sin \phi)$ C). $\frac{(1 + \sin \phi)}{(1 - \sin \phi)}$ D). $\frac{(1 - \sin \phi)}{(1 + \sin \phi)}$

Correct Answer: D

Q.81 What happens when the rate of precipitation is greater than the rate of infiltration?

- Ans A). Rivers and lakes start to evaporate faster B). Groundwater recharge occurs C). Evaporation stops completely
D). Surface runoff increases

Correct Answer: D

Q.82 The basic principle of surveying, 'working from whole part', is best represented by which of the following options?

- Ans A). One can finish the traverse survey quickly.
B). If an accurate basic control is established first, large errors can be prevented and minor ones controlled and localised.
C). Easiness in surveying. D). It helps to continue the work during the second day of surveying.

Correct Answer: B

Q.83 Which fastening system is commonly used with concrete sleepers in Indian Railways?

- Ans A). Elastic Rail Clip B). Dog Spike C). Fang Bolt D). Fish Plate

Correct Answer: A

Q.84	Identify the tool NOT used for stone dressing:				
Ans	A). Splitting chisel	B). Pestle	C). Mash hammer	D). Dressing knife	Correct Answer: B
Q.85	Which soil type is least suitable for shallow foundations?				
Ans	A). Silty clay	B). Fine sand	C). Black cotton soil	D). Coarse sand	Correct Answer: C
Q.86	The pointing that facilitates easy draining of water is _____.				
Ans	A). beaded pointing	B). recessed pointing	C). tuck pointing	D). struck pointing	Correct Answer: D
Q.87	Which of the following is NOT an effect of a force applied to a body?				
Ans	A). Change in direction of motion	B). Change in shape	C). Change in mass	D). Change in motion	Correct Answer: C
Q.88	As per IS 10262:2009, what is the maximum mixing water content per unit volume of concrete for 20 mm nominal maximum size angular coarse aggregate, considering a slump range of 25 to 50 mm?				
Ans	A). 186 kg/m ³	B). 250 kg/m ³	C). 200 kg/m ³	D). 150 kg/m ³	Correct Answer: A
Q.89	Which of the following commands is used in Autodesk 3ds Max to create a new scene?				
Ans	A). Edit -> New Scene	B). Create -> Scene Setup	C). File -> New	D). File -> Open	Correct Answer: C
Q.90	Which is the correct sequence for preparation of the surface for new pointing work?				
Ans	A). Wetting surface and joints; Raking Joints; Cleaning surface and joints B). Cleaning surface and joints; Raking joints; Wetting surface and joints C). Raking joints; Cleaning surface and joints; Wetting surface and joints D). Cleaning surface and joints; Wetting surface and joints; Raking joints				Correct Answer: C
Q.91	Which of the following statements are correct with respect to estimation of water tanks? A: Water proofing compounds are added in plaster of water tank walls. B: Item particulars in estimate of water tanks, does not include estimate of ladder to be built around it. C: When the vertical and horizontal walls of tanks meet, a sloping structure is built at their intersection, this is called haunching. D: When the vertical and horizontal walls of tanks meet, a sloping structure is built at their intersection, this is called soling.				
Ans	A). A and D	B). B and C	C). A and C	D). B and D	Correct Answer: C
Q.92	What is a particle board made up of?				
Ans	A). Layers of odd number veneers glued under pressure B). Wood fibres and synthetic resin moulded together C). Strips of thin wood glued between two veneers D). Wood chips in a binder pressed under heat/pressure				Correct Answer: D
Q.93	Half round country tiles are laid in pairs of _____.				
Ans	A). lap tile and overlap tile	B). bottom tile and crown tile	C). under tile and over tile	D). base tile and covering tile	Correct Answer: C
Q.94	How does adding more fine aggregate affect the properties of Ready Mix Concrete (RMC)?				
Ans	A). Improves compressive strength directly B). Enhances resistance to freezing and thawing C). Increases setting time D). Increases workability				Correct Answer: D
Q.95	How is the design shear strength of concrete (ϕ_c) influenced by the percentage (p_t) of tensile reinforcement in a beam?				
Ans	A). Decreases with an increase in tensile reinforcement percentage B). Increases up to 2% of tension reinforcement and decreases if the tension reinforcement exceeds 2% C). Increases with an increase in tensile reinforcement percentage D). Remains constant regardless of tensile reinforcement percentage				Correct Answer: C
Q.96	In a singly reinforced beam, the reinforcement is provided in which zone?				
Ans	A). Entire cross-section B). Both tension and compression zones C). Only tension zone D). Only compression zone				Correct Answer: C

Q.97 Which of the following states in India has the maximum potential for wind energy?

Ans A). Punjab B). Gujarat C). Himachal Pradesh D). Uttar Pradesh

Correct Answer: B

Q.98 Shooting concrete under pressure with hose pipe and nozzle to repair damaged concrete areas is known as ____.

Ans A). curing B). sealing C). concreting D). guniting

Correct Answer: D

Q.99 In planning a residence, the principle of orientation is adopted to ensure:

Ans A). beautiful aesthetic appearance of the residence B). rooms are oriented to achieve the required privacy
C). natural elements are used effectively in the design D). proper sanitation and hygiene in the residence

Correct Answer: C

Q.100 Which of the following environmental factors negatively affects the durability of concrete?

Ans A). High temperature and humidity variations B). Dry conditions with proper curing done C). Stable temperature with no moisture changes
D). Well-ventilated surroundings

Correct Answer: A

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रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Electrical and Allied Engineering

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 Which type of RAM is faster and DOES NOT require refreshing?

Ans A). SRAM

B). Flash Memory

C). ROM

D). DRAM

Correct Answer: A

Q.2 The kinetic energy of an object is derived using which of the following equations of motion?

Ans A). $s = ut + \frac{1}{2}at^2$

B). $a = (v - u) / t$

C). $v^2 - u^2 = 2as$

D). $v = u + at$

Correct Answer: C

Q.3 Which of the following was NOT an artisan guild during the Mauryan period?

Ans A). Potters

B). Carpenters

C). Bankers and Merchants

D). Astrologers

Correct Answer: D

Q.4 Which operating system is known for its open-source nature and community-driven development for desktops and laptops?

Ans A). iOS

B). Linux

C). Windows

D). macOS

Correct Answer: B

Q.5 The main reason for which we are dependent on air is our _____.

Ans A). respiration

B). excretion

C). digestion

D). osmoregulation

Correct Answer: A

Q.6 Which of the following elements has an atomic number of 8?

Ans A). Nitrogen

B). Oxygen

C). Carbon

D). Hydrogen

Correct Answer: B

Q.7 What does LAN stand for?

Ans A). Local Area Network

B). Limited Access Node

C). Linked Access Network

D). Large Area Network

Correct Answer: A

Q.8 A sound wave with a low frequency will have _____.

Ans A). a low pitch

B). a high pitch

C). a short wavelength

D). a low amplitude

Correct Answer: A

Q.9 Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?

Ans A). Schneider Kreuznach

B). Leica

C). Jenoptik

D). Carl Zeiss AG

Correct Answer: D

Q.10	Who among the following developed the notation system for Hindustani classical music?			
Ans A).	Pandit Vishnu Narayan Bhatkhande	B). Ustad Amjad Ali Khan	C). Ustad Bismillah Khan	D). Pandit Ravi Shankar Correct Answer: A
Q.11	Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?			
Ans A).	Mithali Raj	B). Smriti Mandhana	C). Harmanpreet Kaur	D). Jhulan Goswami Correct Answer: B
Q.12	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?			
Ans A).	5.625 J	B). 3.750 J	C). 1.875 J	D). 7.500 J Correct Answer: A
Q.13	In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.			
Ans A).	chlorine	B). phosphates	C). organochlorine	D). DDT Correct Answer: D
Q.14	An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.			
Ans A).	17.5 cm	B). -9.37 cm	C). -10.0 cm	D). -37.5 cm Correct Answer: D
Q.15	Which function key is used to move text or graphics in a document?			
Ans A).	F1	B). F5	C). F2	D). F12 Correct Answer: C
Q.16	Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?			
Ans A).	=A2+B2	B). =A2*B2	C). =MULTIPLY(A2,B2)	D). =A2-B2 Correct Answer: B
Q.17	The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?			
Ans A).	256 u	B). 64 u	C). 32 u	D). 128 u Correct Answer: A
Q.18	Where can one find the option to change a PowerPoint template?			
Ans A).	Design → Themes	B). Home → Layout	C). View → Slide Master	D). Insert → Themes Correct Answer: A
Q.19	What happens to the pH of pure water when a few drops of lemon juice are added?			
Ans A).	The pH remains the same	B). The pH becomes neutral	C). The pH decreases	D). The pH increases Correct Answer: C
Q.20	Which of the following is NOT a source of collection of municipal solid waste?			
Ans A).	Waste from hospitals	B). Waste from schools	C). Radioactive waste	D). Waste from homes Correct Answer: C
Q.21	What is the primary function of a computer firewall?			
Ans A).	To store user passwords securely	B). To prevent unauthorised access to a private network	C). To speed up internet connectivity	D). To detect and remove computer viruses Correct Answer: B
Q.22	Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?			
Ans A).	Ivor Jennings	B). LM Singhvi	C). BR Ambedkar	D). HM Seervai Correct Answer: B
Q.23	The people of _____ were famously involved in execution of the Chipko movement.			
Ans A).	Garhwal Himalayas	B). Assam	C). Gujarat	D). Delhi Correct Answer: A
Q.24	Which of the following bridges is constructed over the Brahmaputra River in India?			
Ans A).	Dhola-Sadiya Bridge	B). Howrah Bridge	C). Pamban Bridge	D). Mahatma Gandhi Setu Correct Answer: A

Q.25	Which of the following correctly differentiates mixtures and compounds?		
Feature	Mixture	Compound	
A) Separation	Can be separated by physical methods	Requires chemical me	
B) Composition	Fixed ratio	Variable ratio	
C) Properties	Always the same as constituents	Different from constit	
D) Formation	By chemical reaction	By simple mixing	
Ans A). Option B (Composition) is correct B). Option A (Separation) is correct C). Option D (Formation) is correct D). Option C (Properties) is correct			
Correct Answer: B			
Q.26	A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.		
Ans A). random motion	B). rotational motion	C). non-uniform motion	D). uniform motion
Correct Answer: D			
Q.27	The President has the power to dissolve which house of Parliament?		
Ans A). Lok Sabha only	B). Legislative Assembly	C). Both Rajya Sabha and Lok Sabha	D). Rajya Sabha only
Correct Answer: A			
Q.28	Electricity production is categorised under which of the following economic sectors?		
Ans A). Quaternary sector	B). Secondary sector	C). Primary sector	D). Tertiary sector
Correct Answer: B			
Q.29	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?		
Ans A). Sweden	B). Canada	C). United States	D). France
Correct Answer: A			
Q.30	A metal wire is stretched, but it does not break easily. This property is known as:		
Ans A). brittleness	B). malleability	C). hardness	D). ductility
Correct Answer: D			
Q.31	The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.		
Ans A). UV-B	B). UV-A	C). UV-D	D). UV-C
Correct Answer: A			
Q.32	Which of the following will increase the heat produced by a heating element?		
Ans A). Increasing the current flowing through the wire	B). Using a material with high conductivity	C). Using a wire of lower resistance	
D). Decreasing the applied voltage			
Correct Answer: A			
Q.33	A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?		
Ans A). 20%	B). 16.67%	C). 45%	D). 25%
Correct Answer: B			
Q.34	The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?		
Ans A). Article 356	B). Article 123	C). Article 110	D). Article 72
Correct Answer: B			
Q.35	What is the primary function of a firewall tool in a computer network?		
Ans A). To speed up internet connections	B). To store data securely	C). To detect and remove viruses	
D). To monitor and control incoming and outgoing network traffic			
Correct Answer: D			
Q.36	Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.		
Ans A). mutations	B). emotional defects	C). syndromes	D). diseases
Correct Answer: A			
Q.37	Which of the following options is NOT a greenhouse gas?		
Ans A). Carbon dioxide	B). Nitrous oxide	C). Methane	D). Carbon tetrachloride
Correct Answer: D			
Q.38	A concave lens has a focal length of –2 cm. What is its power?		
Ans A). 25 D	B). 0.5 D	C). –50 D	D). –0.5 D
Correct Answer: C			

Q.39 For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.				
Ans A). 1986	B). 1992	C). 1972	D). 1984	Correct Answer: A
Q.40 In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?				
Ans A). 600 metres T20	B). 200 metres T20	C). 100 metres T20	D). 400 metres T20	Correct Answer: D
Q.41 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Fungicides	B). Organic fertilisers	C). Pesticides	D). Herbicides	Correct Answer: B
Q.42 What happens when you click on the 'Forward' button in an email?				
Ans A). The email is automatically sent to all contacts.				Correct Answer: D
D). The original message is copied into a new email draft.				
Q.43 Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?				
Ans A). VALUE()	B). NUMBERTOTEXT()	C). FORMAT()	D). TEXT()	Correct Answer: D
Q.44 Who is known as the leader of the Green Revolution in India?				
Ans A). C Subramaniam	B). Prof. MS Swaminathan	C). Tribhuvandas Kishibhai Patel	D). Dr. Rajendra Prasad	Correct Answer: B
Q.45 An alloy is considered a homogeneous mixture because:				
Ans A). it exhibits uniform composition throughout		B). its components are chemically combined in fixed proportions		
C). its components can be separated by filtration		D). it contains two or more phases		
Correct Answer: A				
Q.46 Due to global warming, the temperature of the earth has increased by _____				
Ans A). 0.8°C	B). 0.6°C	C). 0.5°C	D). 0.7°C	Correct Answer: B
Q.47 What is the general orientation of the Himalayan ranges in the northwestern part of India?				
Ans A). East-South	B). Northwest to Southeast	C). Northeast to Southwest	D). South-North	Correct Answer: B
Q.48 Who among the following established the Bengal Chemical Swadeshi Stores?				
Ans A). Surendranath Banerjee	B). Acharya PC Ray	C). BG Tilak	D). Dadabhai Naoroji	Correct Answer: B
Q.49 Why do covalent compounds generally have low melting and boiling points?				
Ans A). They have a rigid lattice structure.		B). They have weak intermolecular forces.		Correct Answer: B
D). They contain metallic bonds.		C). They have strong electrostatic forces.		
Q.50 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?				
Ans A). Global Positioning System (GPS)		B). Global Navigation Satellite System (GLONASS)		Correct Answer: C
D). Galileo		C). Navigation with Indian Constellation (NavIC)		

Q.1	In Shunt Zener diode voltage regulator circuit, the purpose of the resistor (R) connected in series with the input voltage is:				
Ans	A). to filter out noise and ripples in the output voltage	B). to amplify the input voltage	C). to limit the current through the Zener diode	D). to add the input voltage and voltage drop across the resistor R and provide it to the Zener diode	Correct Answer: C
Q.2	In arc heating, the arc is sustained by:				
Ans	A). dielectric strength of air	B). magnetic field	C). ionisation of air	D). heat conduction	Correct Answer: C

Q.3 The difference between Capacity Factor and Load Factor represents _____.

Ans A). the total energy consumed by the plant B). the plant's efficiency in converting fuel to electricity C). the maximum demand of the plant
D). the plant's reserve capacity for future load growth

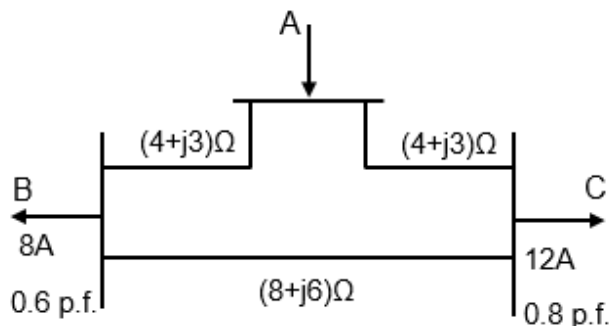
Correct Answer: D

Q.4 Which of the following is characteristic of soft magnetic materials?

Ans A). Large hysteresis loss B). Low coercivity C). Low relative permeability D). Low absolute permeability

Correct Answer: B

Q.5 Find the total current fed at the sending end A, in the given ring distributor ABC _____.



Ans A). $(13.6 + j14.4)$ A B). $(12 + j8)$ C). $(14.4 + j13.6)$ A D). $(8 + j6)$ A

Correct Answer: C

Q.6 Read the given Assertion (A) and Reason (R) carefully and select the correct option.

(A): Weakening of springs in PMMC is due to aging and temperature.

(R): Permanent magnets used in PMMC instruments tend to lose their strength over time.

Ans A). A is false, but R is true B). Both A and R are true, but R is not the correct explanation of A. C). A is true, but R is false.
D). Both A and R are true, and R is the correct explanation of A.

Correct Answer: B

Q.7 With reference to energy band diagram of the NPN BJT, there exist _____ space charge regions and maximum band bending at _____ junction.

Ans A). three; base collector B). two; base emitter C). three; base emitter D). two; base collector

Correct Answer: B

Q.8 The 'π (Pi) Model' or the 'T Model' is commonly used to represent which type of transmission line?

Ans A). Medium transmission line (80 km to 160 km) B). Long transmission line (more than 160 km)
C). Ultra-high voltage transmission line (above 1000 km) D). Short transmission line (less than 80 km)

Correct Answer: A

Q.9 Why are short-pitch windings preferred in alternators despite their lower induced EMF per coil?

Ans A). They eliminate the need for insulation. B). They increase the length of end connections. C). They allow for higher voltage ratings.
D). They increase the overall efficiency.

Correct Answer: D

Q.10 In a Star-Delta Starter used for induction motors, the starting torque is reduced to approximately:

Ans A). 33% of full-load torque B). 66% of full-load torque C). 50% of full-load torque D). 75% of full-load torque

Correct Answer: A

Q.11 Microwave heating is based on the principle of:

Ans A). conduction heating B). dielectric heating C). induction heating D). arc heating

Correct Answer: B

Q.12 Which of the following is a key characteristic of a slip ring induction motor?

Ans A). High efficiency at all loads B). Low starting torque and high starting current C). Operates only at synchronous speed
D). High starting torque and low starting current

Correct Answer: D

Q.13 What is the primary purpose of estimation and costing in unit earthing for commercial installations?

Ans A). To eliminate the need for earthing in electrical systems

B). To determine the materials, labour and costs required for a safe and effective earthing system

C). To ensure the earthing system is aesthetically pleasing D). To focus only on the decorative aspects of the installation

Correct Answer: B

Q.14 Consider a fixed bias circuit using a NPN BJT transistor in CE configuration along with base resistance R_b , collector resistance R_c and supply voltage V_{cc} . If β is the current gain of the BJT, then the stability factor of the fixed bias circuit is:

Ans A). inversely proportional to β

B). independent of β

C). directly proportional to β

D). inversely proportional to square of β

Correct Answer: C

Q.15 What is the primary purpose of 'Inter-Turn Fault Protection' in an alternator?

Ans A). To detect faults between the rotor and stator windings

B). To monitor the voltage imbalance in the alternator

C). To protect against earth faults in the rotor winding

D). To detect faults between adjacent turns of the stator winding

Correct Answer: D

Q.16 The direction of the induced EMF in a coil may be found with the help of:

Ans A). Fleming's right-hand rule

B). Fleming's left-hand rule

C). Steinmetz's law

D). Faraday's law

Correct Answer: A

Q.17 In a synchronous motor, If the load angle exceeds 90° , then the motor will:

Ans A). lose synchronism and stall B). reduce copper losses C). increase efficiency D). operate at leading power factor

Correct Answer: A

Q.18 What is the role of heliostats in a power tower system?

Ans A). To store solar energy for later use

B). To convert thermal energy into electrical energy

C). To track the Sun and direct sunlight to the receiver

D). To generate electricity directly

Correct Answer: C

Q.19 What law explains the induction of eddy currents in the armature core?

Ans A). Lenz's Law

B). Faraday's Law

C). Ohm's Law

D). Ampere's Law

Correct Answer: B

Q.20 In an auto transformer, if the voltage transformation ratio is 2 : 1, what is the ratio of the primary current to the secondary current?

Ans A). 2 : 1

B). 1 : 2

C). 1 : 1

D). 2 : 3

Correct Answer: B

Q.21 What is the purpose of '100% Stator Earth Fault Protection' in an alternator?

Ans A). To monitor the voltage regulation of the alternator

B). To detect and protect against earth faults occurring anywhere in the stator winding

C). To detect and protect against phase-to-phase faults in the stator winding

D). To protect the rotor winding from overheating

Correct Answer: B

Q.22 Which of the following statements is NOT correct regarding the errors in a Potential Transformer?

Ans A). Both Power angle error and Ratio error influence Power measurement.

B). Both Power angle error and Ratio error are important for measuring Voltage.

C). Power angle error alone affects Voltage measurement in a Potential Transformer.

D). Voltage measurement in a Potential Transformer depends primarily on Ratio error.

Correct Answer: C

Q.23 In the torque-load characteristic curve of a DC series motor, what happens as the load increases?

Ans A). The torque becomes constant.

B). The torque decreases proportionally.

C). The torque increases proportionally to the square of the armature current.

D). The armature current decreases.

Correct Answer: C

Q.24 Fleming's Right-Hand Rule is used to determine the direction of:

Ans A). magnetic field around a conductor

B). the induced electromotive force

C). force on a charged particle

D). current flowing through a conductor

Correct Answer: B

Q.25 In j-notation, used in phasor representation, the imaginary unit j^2 represents ____.

Ans A). -1 B). $\sqrt{-1}$ C). 1 D). 0

Correct Answer: A

Q.26 A power system with a high reactive power demand will result in ____.

Ans A). high power factor B). no change in power factor C). unity power factor D). low power factor

Correct Answer: D

Q.27 Which factor does NOT affect the starting torque of an induction start synchronous motor?

Ans A). Field excitation during startup B). Rotor reactance C). Rotor resistance D). Supply voltage

Correct Answer: A

Q.28 In a power triangle, what is the relationship between active power (P), reactive power (Q) and apparent power (S)?

Ans A). $Q^2 = S^2 + P^2$ B). $P^2 = S^2 + Q^2$ C). $S = P + Q$ D). $S^2 = P^2 + Q^2$

Correct Answer: D

Q.29 In a series RLC circuit, the total impedance is minimum when ____.

Ans A). $X_L < X_C$ B). $X_L > X_C$ C). the resistance is zero D). $X_L = X_C$

Correct Answer: D

Q.30 What is the main drawback of using an induction generator in a grid-connected wind turbine?

Ans A). It is not suitable for wind energy applications. B). It cannot generate active power. C). It requires external reactive power from the grid. D). It cannot operate at high speeds.

Correct Answer: C

Q.31 In a three-phase induction motor which component represents mechanical load in the equivalent circuit?

Ans A). $R_2(1-s)$ B). $\frac{R_2(1-s)}{s}$ C). $\frac{sR_2(1-s)}{s}$ D). $\frac{R_2}{s}$

Correct Answer: B

Q.32 In a three-phase star-connected system with a neutral shift, how can the problem be corrected?

Ans A). By increasing the phase voltage B). By increasing the neutral wire resistance C). By disconnecting the neutral wire D). By balancing the load among the three phases

Correct Answer: D

Q.33 Read the given Assertion (A) and Reason (R) carefully and select the correct option.

(A): The burden of an instrument transformer is usually expressed in volt-amperes (VA).
(R): Burden is the total impedance of the connected devices, including meters, relays, and wiring.

Ans A). Both A and R are true and R is the not the correct explanation of A. B). A is false, but R is true. C). A is true, but R is false. D). Both A and R are true and R is the correct explanation of A.

Correct Answer: A

Q.34 What is the first step in the design procedure for electrical installations in commercial buildings?

Ans A). Conducting a load analysis to determine power requirements B). Installing protective devices without planning C). Selecting decorative lighting fixtures D). Ignoring safety standards to reduce costs

Correct Answer: A

Q.35 Which connection method is correct when using a CT and PT with a wattmeter?

Ans A). CT is connected in series with the wattmeter current coil, and PT is connected in parallel with the voltage coil.
B). CT is connected in parallel with the wattmeter current coil, and PT is connected in series with the voltage coil.
C). Both CT and PT are connected in series with the wattmeter. D). Both CT and PT are connected in parallel with the wattmeter.

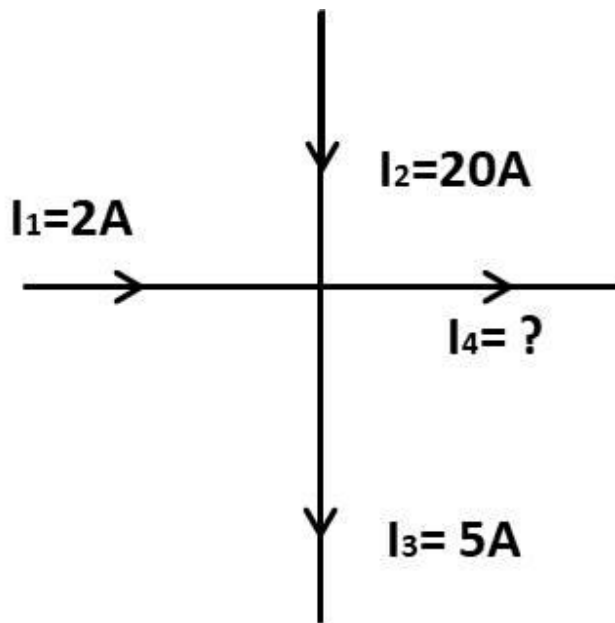
Correct Answer: A

Q.36 When armature conductors carry a lower load current, the armature's MMF (magnetomotive force) causes:

Ans A). no effect on the main field flux B). the main field flux to strengthen C). an increase in the induced emf D). a cross-magnetising effect

Correct Answer: D

Q.37 Find the current I_4 flowing in the circuit shown below.



Ans A). 13 A

B). 23 A

C). 17 A

D). 27 A

Correct Answer: C

Q.38 Winding in wire wound resistor is made up of _____.

Ans A). Carbon

B). Chromium cobalt

C). Nickel

D). Nickel-chromium alloy

Correct Answer: D

Q.39 The luminous intensity of a source emitting light uniformly in all directions of 10 lumens per steradian is:

Ans A). 1 candela

B). 5 candela

C). 10 candela

D). 20 candela

Correct Answer: C

Q.40 Shaded pole motors are ideal for _____.

Ans A). low-power, continuous-duty applications B). intermittent heavy-load tasks C). high-vibration environments D). precision speed control

Correct Answer: A

Q.41 For a P-N junction diode, as the temperature increases the forward knee voltage of the diode _____ and the reverse saturation current _____.

Ans A). decreases; decreases

B). increases; decreases

C). increases; increases

D). decreases; increases

Correct Answer: D

Q.42 If laplace transform of voltage across capacitor of value 0.5 F is $V_c(s) = \frac{1}{s^2 + 1}$, the value of current through capacitor at $t = 0^+$ will be:

Ans A). 1 A

B). 0.5 A

C). zero

D). 2 A

Correct Answer: B

Q.43 Coefficient of coupling between two coils is given as _____, where M = Mutual Inductance, L_1 = Self Inductance of coil 1 and L_2 = Self Inductance of coil 2

Ans A). $\frac{M}{\sqrt{L_1 L_2}}$

B). $\frac{\sqrt{L_1 L_2}}{M}$

C). $M\sqrt{L_1 L_2}$

D). $L_1 \cdot L_2 \cdot M$

Correct Answer: A

Q.44 Which of the following components is responsible for atomising the fuel in a diesel engine?

Ans A). Turbocharger

B). Carburetor

C). Fuel pump

D). Injector

Correct Answer: D

Q.45 Identify the correct statement related to switching speed of the BJT.

Ans A). Switching speed of BJT is greater than switching speed on a MOSFET.

B). Switching speed of BJT is equal to switching speed on a MOSFET.

C). Switching speed of BJT is less compared to switching speed on a MOSFET.

D). BJT is an amplifying device and hence cannot work as a switch. Therefore, switching speed parameter does not exist for a BJT.

Correct Answer: C

Q.46 The eddy current loss in a transformer is caused by:

- Ans A). resistance of the primary winding B). voltage drop across the windings C). saturation of the core material
D). circulating currents within the core due to changing magnetic flux

Correct Answer: D

Q.47 A 0.5Ω shunt resistor is used to measure current with a CRO. If the measured voltage drop is 5V, what is the current?

- Ans A). 2.5 A B). 10 A C). 5 A D). 20 A

Correct Answer: B

Q.48 Electric Arc Welding is a type of:

- Ans A). resistance welding B). fusion welding C). solid-state welding D). pressure welding

Correct Answer: B

Q.49 Which of the following best describes the role of cogeneration in energy conservation and how the application of a tariff system can help reduce energy bills?

- Ans A). Cogeneration is only applicable in large industrial settings and has no impact on energy conservation, while tariff systems are solely used for revenue generation by utilities.
B). Cogeneration and tariff systems are unrelated concepts, and neither contributes to energy conservation or cost reduction.
C). Cogeneration increases energy consumption by producing excess electricity, and tariff systems are used to penalize high energy users without reducing bills.
D). Cogeneration reduces energy waste by simultaneously producing electricity and useful thermal energy, while a well-designed tariff system incentivizes off-peak energy usage, lowering overall costs.

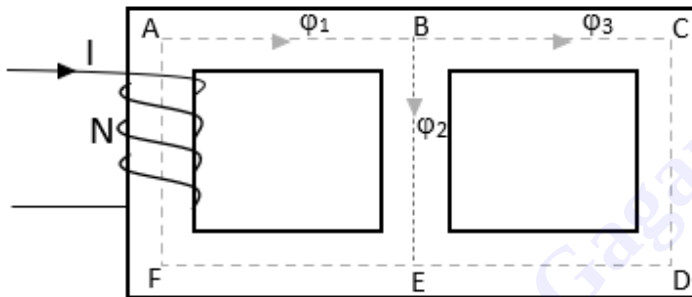
Correct Answer: D

Q.50 Which of the following materials should NOT be placed in a microwave oven?

- Ans A). Paper B). Aluminium foil C). Glass D). Plastic

Correct Answer: B

Q.51 Two magnetic paths BE and BCDE are in parallel and form a parallel magnetic circuit, as shown in the given figure. The Ampere Turn required for this parallel circuit is equal to:



- Ans A). inverse of Ampere Turn required for BE B). ampere Turn required for any one of the paths
C). square of Ampere Turn required for any one of the paths D). sum of Ampere Turn required for BE and BCDE

Correct Answer: B

Q.52 Which of the following is a common internal fault in transformers?

- Ans A). High power factor leading to overheating B). Excessive cooling system efficiency C). Overvoltage due to lightning strikes
D). Winding inter-turn short circuits

Correct Answer: D

Q.53 Which of the following statements regarding active power in AC circuits is INCORRECT?

- Ans A). Active power increases with an increase in power factor. B). Active power is the real power consumed by the circuit.
C). Active power is given by $P=VI\sin\phi$ in an AC circuit. D). The unit of active power is Watt (W).

Correct Answer: C

Q.54 Which type of transformer is best suited for applications that require a low leakage reactance?

- Ans A). Ring type transformer B). Core type transformer C). Shell type transformer D). Laminated type transformer

Correct Answer: C

Q.55 For simple fixed bias BJT in common emitter configuration using NPN transistor, base resistance R_b , collector resistance R_c and supply voltage V_{cc} , the base current _____ with increase in R_b and the emitter current _____.

- Ans A). decreases; increases B). increases; increases C). decreases; decreases D). increases; decreases

Correct Answer: C

Q.56 Which of the following is the commonly used generator in a DC welding machine?

Ans A). Shunt generator B). Permanent magnet generator C). Compound generator D). Series generator

Correct Answer: C

**Q.57 The relation between absolute permeability, μ and relative permeability μ_r of a material is given by:
(Given μ_o is absolute permeability of air)**

Ans A). $\mu_o = \frac{\mu_r}{\mu}$ B). $\mu_r = \frac{\mu}{\mu_o}$ C). $\mu = \frac{\mu_o}{\mu_r}$ D). $\mu = \mu_r$

Correct Answer: B

Q.58 If the quality factor (Q) of a resonant series circuit increases, then what happens to the voltage magnification?

Ans A). It remains the same because supply voltage is constant. B). It increases because energy losses decrease.
C). It becomes zero because resonance cancels the reactance. D). It decreases because resistance increases.

Correct Answer: B

Q.59 Universal motors exhibit high starting torque due to _____.

Ans A). series connection of stator and rotor windings B). permanent magnet stators C). shunt winding configuration
D). use of squirrel-cage rotors

Correct Answer: A

Q.60 How does the starting torque of a split-phase motor compare with that of a shaded-pole motor?

Ans A). Both have similar starting torque. B). Split-phase motors have higher starting torque. C). Split-phase motors have no starting torque.
D). Shaded-pole motors have higher starting torque.

Correct Answer: B

Q.61 In a biomass power plant, what is the main purpose of the combustion/gasification chamber?

Ans A). To cool down the system after power generation B). To store biomass for future use
C). To burn biomass or convert it into syngas for energy generation D). To distribute electricity to the grid

Correct Answer: C

Q.62 A composite magnetic circuit consisting of three different magnetic material of different permeability are joined in the form of a ring. The total reluctance is:

Ans A). the sum of individual reluctances. B). thrice the reluctance of material 1 C). the product of individual reluctances
D). inverse of the sum of individual reluctances

Correct Answer: A

Q.63 Why is an electrodynamicometer-type wattmeter used as a standard instrument in laboratories?

Ans A). It works only for low-power circuits. B). It has high accuracy and precision. C). It is cheaper than other wattmeters.
D). It requires no external power supply.

Correct Answer: B

Q.64 Why does Kelvin's Law give different conductor sizes for two identical systems?

Ans A). Because the electrical load is different in both systems B). Due to variations in interest rates, depreciation, and energy costs
C). Because one system uses overhead lines and the other uses underground cables
D). Because the resistance of conductors is always changing

Correct Answer: B

Q.65 Magnetic fringing can be minimised by:

Ans A). scattering the magnetic flux B). decreasing the temperature C). using low quality magnetic material D). reducing the air gap

Correct Answer: D

Q.66 Calculate the potential difference of an energy source that provides 6.8 J for every milli-coulomb of charge that it delivers.

Ans A). 6.8 mV B). 6.8 kV C). 6.8 V D). 0.68 V

Correct Answer: B

Q.67 Which of the following is NOT a condition for the parallel operation of transformers?

Ans A). Same per unit impedance B). Same voltage ratio C). Same core material D). Same polarity

Correct Answer: C

Q.68 The total collector current for a BJT operating in the active region is given by the relation _____ and the leakage current component is _____.

- Ans A). $I_c = I_{c0}(\text{minority})$; majority carrier component B). $I_c = I_c(\text{majority}) + I_{c0}(\text{minority})$; majority carrier component
C). $I_c = I_c(\text{majority})$; minority carrier component D). $I_c = I_c(\text{majority}) + I_{c0}(\text{minority})$; minority carrier component

Correct Answer: D

Q.69 What is a key factor in the installation and costing of electrical systems for commercial buildings?

- Ans A). Ignoring safety standards to reduce costs
B). Ensuring compliance with electrical codes and standards while estimating materials and labour costs
C). Focusing only on decorative lighting and aesthetics D). Eliminating the use of protective devices

Correct Answer: B

Q.70 Which of the following is a commonly used light source in modern street light installations?

- Ans A). Fluorescent tubes B). Candles C). Incandescent bulbs D). High-Pressure Sodium (HPS) lamps

Correct Answer: D

Q.71 Which of the following is NOT an advantage of a PMMC instrument?

- Ans A). Suitable for AC and DC measurements B). Linear scale C). High accuracy D). Low power consumption

Correct Answer: A

Q.72 Stray load losses in synchronous motors are caused by _____.

- Ans A). poor lubrication in bearings B). excessive field excitation C). leakage fluxes and harmonic effects D). high rotor inertia

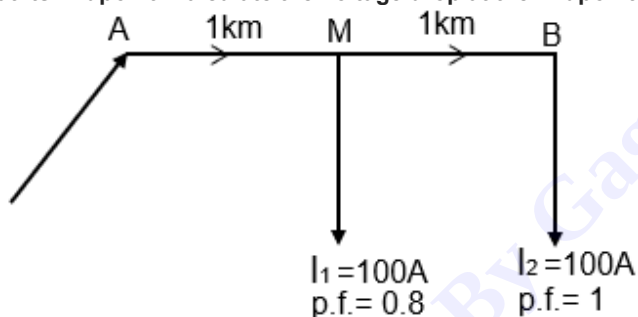
Correct Answer: C

Q.73 In Lambert's Cosine Law, the angle θ is measured between:

- Ans A). reflected light and normal B). source and observer C). incident light and normal D). horizontal and vertical plane

Correct Answer: C

Q.74 A single-phase distributor, 2 km long, has a line impedance of $(0.2 + 0.3j) \Omega/\text{km}$. It supplies a load at the far end, where the voltage V_B is 100 V and the current is 100 A at unity power factor. Additionally, a load of 100 A at 0.8 power factor lagging is connected at its midpoint. Calculate the voltage drop at the midpoint.



- Ans A). $120 + j15$ B). $110 + j15$ C). $210 + j15$ D). $120 + j30$

Correct Answer: D

Q.75 What is the purpose of a closed feeder ring in an interconnected system?

- Ans A). To reduce voltage stability B). To prevent power distribution C). To disconnect substations from each other
D). To create a looped power supply network

Correct Answer: D

Q.76 The collector to bias circuit in BJT has better stability than fixed bias circuit as _____.

- Ans A). it can operate on higher supply voltages than that of fixed bias circuit B). it can operate on higher power than fixed bias circuit
C). its stability factor is lower than that of fixed bias D). its stability factor is higher than that of fixed bias

Correct Answer: C

Q.77 Which underground cable laying method requires re-excavation for load expansion, making modifications costly?

- Ans A). Draw-in System B). Overhead System C). Trough Laying D). Direct Laying

Correct Answer: C

Q.78 Power of an electrical system is measured in _____.

- Ans A). watt-sec B). newton-metre C). joule D). watt

Correct Answer: D

Q.79 If the frequency of a series R-C circuit is increased, what happens to the capacitive reactance X_C?				
Ans A).	It decreases	B). It remains constant	C). It increases	D). It becomes infinite
Correct Answer: A				
Q.80 Which of the following statements is NOT correct regarding the vector method in AC circuit analysis?				
Ans A).	The vector method is used to represent sinusoidal AC quantities.			
B).	The vector method helps in determining the phase difference between voltage and current.			
C).	Phasors in the vector method rotate in a clockwise direction in the complex plane.			
D).	Phasor diagrams are used to solve AC circuit problems involving impedance.			
Correct Answer: C				
Q.81 A nuclear reactor produces 3.2×10^{10} J of energy per second. How many fissions occur per second if each fission releases 200 MeV?				
Ans A).	10^{10}	B). 10^{21}	C). 10^{11}	D). 10^{19}
Correct Answer: B				
Q.82 In relay terminology, what does the term 'pickup value' refer to?				
Ans A).	The time delay before the relay operates after detecting a fault			
B).	The minimum value of the operating quantity (current, voltage, etc.) required to activate the relay			
C).	The voltage level at which the relay resets after a fault is cleared		D).	The maximum current a relay can withstand without damage
Correct Answer: B				
Q.83 The luminous intensity of a light source is defined as the luminous flux per unit:				
Ans A).	volume	B). length	C). area	D). solid angle
Correct Answer: D				
Q.84 Which control method enables four-quadrant operation of induction motors?				
Ans A).	Variable Frequency Drive (VFD)	B). Rotor resistance control	C). Stator voltage control	D). Direct On-Line (DOL) starting
Correct Answer: A				
Q.85 The EMF equation of a transformer is given by:				
Ans A).	$E = 4.44fN\phi$	B). $E = 4.44fNA\phi$	C). $E = 4.44NA\phi$	D). $E = 4.44f^2\phi N$
Correct Answer: A				
Q.86 Which of the following is an example of a constant load application for a DC shunt generator?				
Ans A).	Centrifugal pump	B). DC arc welding	C). Induction heating	D). Electric motor
Correct Answer: A				
Q.87 In large-scale solar PV plants, why is string inverter technology preferred over central inverters in some cases?				
Ans A).	It requires fewer connections and is easier to maintain.		B).	It generates higher voltage DC output.
C).	It reduces power losses due to shading and mismatch.		D).	It eliminates the need for AC cabling.
Correct Answer: C				
Q.88 How many types of heating elements are commonly used in electric irons?				
Ans A).	Four	B). Two	C). One	D). Three
Correct Answer: B				
Q.89 What is the bias stability factor (S) for a fixed bias circuit?				
Ans A).	$S = (1 + \beta) / (1 + \beta + \beta^2)$	B). $S = (1 + \beta)$	C). $S = \beta / (1 + \beta)$	D). $S = 1 / (1 + \beta)$
Correct Answer: B				
Q.90 During the no-load test of a transformer, the secondary winding is:				
Ans A).	connected to a load	B). connected in parallel with the primary winding	C). short-circuited	D). open-circuited
Correct Answer: D				
Q.91 The capacitance of a parallel plate capacitor depends upon:				
Ans A).	potential difference between plates	B). thickness of plates	C). separation between plates	D). type of metal used
Correct Answer: C				
Q.92 In Norton's Theorem, the equivalent circuit consists of ____.				
Ans A).	a voltage source in parallel with a resistor		B).	a current source in series with a resistor
D).	a voltage source in series with a resistor		C).	a current source in parallel with a resistor
Correct Answer: C				

Q.93 Which of the following is a critical factor in the installation and estimation of agricultural pumps and flourmills?

- Ans A). Ignoring the load characteristics to simplify the design B). Focusing only on the mechanical components of the system
C). Ensuring the system operates without any protective devices
D). Calculating the power requirements and selecting appropriate protective devices

Correct Answer: D

Q.94 If the impedance of a parallel circuit is given by $Z = 5 - j4$, then the admittance is given by_____.

- Ans A). $5 + j4$ B). $5 - j4$ C). 9 D). $\frac{5 + j4}{41}$

Correct Answer: D

Q.95 Why is voltage drop analysis important in an AC distribution system?

- Ans A). To increase power losses B). To reduce the system frequency C). To increase resistance in the conductors
D). To ensure voltage levels remain within acceptable limits

Correct Answer: D

Q.96 In a transformer, if the frequency of the supply voltage is increased, what happens to the induced voltage?

- Ans A). It becomes zero B). It remains the same C). It decreases D). It increases

Correct Answer: D

Q.97 In a transformer, the efficiency can be calculated with reasonable accuracy by knowing:

- Ans A). the losses (core and copper losses) B). the input and output voltage C). the short-circuit current D). the rated power

Correct Answer: A

Q.98 If the power factor of a three-phase system is 0.8, and the apparent power is 10 kVA, then what is the active power?

- Ans A). 8 kW B). 10 kW C). 12 kW D). 6 kW

Correct Answer: A

Q.99 How can polarity in transformers be verified?

- Ans A). By conducting a short circuit test B). By measuring the input current C). By checking the voltage across the secondary winding
D). By using a voltmeter to measure the voltage difference

Correct Answer: D

Q.100 What will be the voltage relationship of frequency domain relation for inductor having time domain $v(t) = L di/dt$?

- Ans A). $V(s) = LsI(s) - Li(0)$ B). $V(s) = LI(s)$ C). $V(s) = LsI(s)$ D). $V(s) = LI(s) - Li(0)$

Correct Answer: A



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD

सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Electrical and Allied Engineering

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?

Ans A). 20% of Lok Sabha strength B). 15% of Lok Sabha strength C). 10% of Lok Sabha strength D). 12% of Lok Sabha strength

Correct Answer: B

Q.2 The glass panel used in greenhouses is known to retain _____.

Ans A). rainfall B). pH C). humidity D). heat

Correct Answer: D

Q.3 The Industrial Policy Resolution of 1956 categorised industries into how many groups?

Ans A). Seven B). Three C). Five D). Nine

Correct Answer: B

Q.4 If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.

Ans A). Bcc B). Subject C). To D). Cc

Correct Answer: D

Q.5 The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?

Ans A). 2008 B). 2005 C). 2014 D). 2015

Correct Answer: D

Q.6 What is the primary purpose of using a firewall on a Personal Computer?

Ans A). To speed up internet connectivity B). To increase storage space C). To clean up temporary files
D). To block unauthorised access and protect the computer

Correct Answer: D

Q.7 Inertia depends on which property of an object?

Ans A). Shape B). Mass C). Velocity D). Acceleration

Correct Answer: B

Q.8 What is the first step to securing ones smartphone or tablet?

Ans A). Turning off mobile data B). Using only free Wi-Fi networks C). Installing more apps D). Setting a password/PIN-protected lock screen

Correct Answer: D

Q.9	Which official in the Gupta administration was responsible for peace and war matters?			
Ans	A). Vishayapati	B). Mahapratihara	C). Sandhi-Vigrahika	D). Mahadandanayaka
	Correct Answer: C			
Q.10	According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?			
Ans	A). 15.5%	B). 25.7%	C). 27.5%	D). 20%
	Correct Answer: B			
Q.11	What is India's global military ranking in the 2025 Global Firepower (GFP) index?			
Ans	A). 2 nd	B). 3 rd	C). 4 th	D). 5 th
	Correct Answer: C			
Q.12	Which of the following is NOT a source of release of smokestacks?			
Ans	A). Rivers	B). Thermal power plants	C). Smelters	D). Industries
	Correct Answer: A			
Q.13	Which of the following is NOT toxic to non-target organisms in the soil?			
Ans	A). Herbicides	B). Fungicides	C). Organic fertilisers	D). Pesticides
	Correct Answer: C			
Q.14	The practice of Jhum cultivation is prevalent in the _____.			
Ans	A). South east	B). North west	C). South west	D). North east
	Correct Answer: D			
Q.15	Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?			
Ans	A). Mumbai	B). Kolkata	C). Chennai	D). New Delhi
	Correct Answer: D			
Q.16	The energy that is derived from the use of radioactive isotopes is termed as _____.			
Ans	A). solar energy	B). geothermal energy	C). thermal energy	D). nuclear energy
	Correct Answer: D			
Q.17	Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?			
Ans	A). Microsoft	B). Amazon	C). Google	D). Meta
	Correct Answer: D			
Q.18	In an electric circuit, what is the correct way to connect an ammeter?			
Ans	A). In parallel with the source B). In series with the component C). In parallel with the component D). In either series or parallel			
	Correct Answer: B			
Q.19	What is the purpose of the Collation option in the Print settings?			
Ans	A). To change the printer selection B). To adjust the page orientation C). To select a custom print range D). To print all the pages of a document as a set			
	Correct Answer: D			
Q.20	Why does a bee sting cause pain and irritation?			
Ans	A). The sting injects methanoic acid. B). The sting injects a mild sugar solution. C). The sting contains a strong base. D). The sting releases carbon dioxide gas.			
	Correct Answer: A			
Q.21	What happens when an acid reacts with a metal oxide?			
Ans	A). Only salt is formed. B). A salt and hydrogen gas are formed. C). A salt and water are formed. D). Only water is formed.			
	Correct Answer: C			
Q.22	Which of the following is NOT a component of a CPU?			
Ans	A). Arithmetic Logic Unit (ALU)	B). Control Unit (CU)	C). Cache Memory	D). Hard Disk
	Correct Answer: D			
Q.23	Which of the following states is NOT covered under the Atal Bhujal Yojana?			
Ans	A). Rajasthan	B). Maharashtra	C). Jharkhand	D). Uttar Pradesh
	Correct Answer: C			
Q.24	The maximum sound is generated _____.			
Ans	A). from industrial smoke B). by the take off of a jet plane C). from vehicular emissions D). from house chimneys			
	Correct Answer: B			

Q.25	The main use of chlorofluorocarbons is in _____.				
Ans	A). refrigerants	B). smog	C). chimneys	D). vehicles	Correct Answer: A
Q.26	The Rudra Veena is predominantly associated with which genre of Hindustani music?				
Ans	A). Khayal	B). Ghazal	C). Dhrupad	D). Thumri	Correct Answer: C
Q.27	Which state of matter shows the highest expansion when temperature is increased?				
Ans	A). Solids	B). Liquids	C). Plasma	D). Gases	Correct Answer: D
Q.28	What is the net force acting on an object if balanced forces are applied?				
Ans	A). Infinite	B). Equal to the mass of the object	C). Zero	D). Equal to acceleration	Correct Answer: C
Q.29	What is the approximate pH of a neutral salt solution?				
Ans	A). Depends on the temperature	B). Less than 7	C). More than 7	D). Equal to 7	Correct Answer: D
Q.30	Which of the following correctly explains why clothes dry faster on a windy day?				
Ans	A). Wind decreases the temperature of the water molecules. B). Wind removes the water vapour from the clothes' surroundings. C). Wind reduces the surface area of the clothes. D). Wind increases the humidity around the clothes.				Correct Answer: B
Q.31	Which defect of vision occurs due to the weakening of ciliary muscles with age?				
Ans	A). Myopia	B). Hypermetropia	C). Astigmatism	D). Presbyopia	Correct Answer: D
Q.32	Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?				
Ans	A). Fundamental Rights	B). Preamble	C). Fundamental Duties	D). Directive Principles of State Policy	Correct Answer: D
Q.33	Which of the following is a characteristic difference between colloids and true solutions?				
Ans	A). True solutions exhibit Brownian motion, but colloids do not. B). True solutions show the Tyndall effect, but colloids do not. C). True solutions have a single-phase system, whereas colloids have a two-phase system. D). True solutions have visible solute particles, whereas colloids have invisible dispersed particles.				Correct Answer: C
Q.34	What does PCB stand for?				
Ans	A). Printed Circuit Board	B). Primary Control Board	C). Peripheral Connection Bus	D). Processing Circuit Board	Correct Answer: A
Q.35	What happens when a computer is put into Sleep mode?				
Ans	A). It keeps the session active in RAM while using minimal power. B). It shuts down completely. C). It stores data on the hard drive and powers off. D). It restarts automatically after a few minutes.				Correct Answer: A
Q.36	The fine powder that is obtained from the modified and recycled form of plastic is called _____.				
Ans	A). polystyrene	B). polyblend	C). polythene	D). polyethylene	Correct Answer: B
Q.37	The phenomenon of multiple echoes due to repeated reflections is called _____.				
Ans	A). resonance	B). reverberation	C). refraction	D). diffraction	Correct Answer: B
Q.38	Which of the following is the correct way to insert a new column in a spreadsheet?				
Ans	A). Go to File > New > Column. B). Go to Home > Insert > Insert Sheet Columns. C). Use Ctrl + Z to insert a column. D). Press Ctrl + X and then Insert.				Correct Answer: B
Q.39	Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?				
Ans	A). $\text{Al}(\text{SO}_4)_3$	B). Al_2SO_4	C). $\text{Al}_2(\text{SO}_4)_3$	D). $\text{Al}_3(\text{SO}_4)_2$	Correct Answer: C
Q.40	In which of the following regions the Himalayas has the greatest width?				
Ans	A). Arunachal Pradesh	B). Kashmir	C). Himachal Pradesh	D). Sikkim	Correct Answer: B

Q.41	What is the shortcut key to start a slideshow from the beginning?			
Ans	A). F5	B). Alt + Tab	C). Ctrl + P	D). Shift + F5
Correct Answer: A				
Q.42	Which of the following CANNOT be considered as a measure to control global warming?			
Ans	A). Causing deforestation	B). Cutting down use of fossil fuel	C). Efficiently using energy	D). Reduction in emission of greenhouse gases
Correct Answer: A				
Q.43	Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?			
Ans	A). Article 53	B). Article 77	C). Article 88	D). Article 78
Correct Answer: C				
Q.44	Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.			
Ans	A). MgPO_4	B). $\text{Mg}_2(\text{PO}_4)_3$	C). $\text{Mg}_3(\text{PO}_4)_2$	D). $\text{Mg}(\text{PO}_4)_3$
Correct Answer: C				
Q.45	What was the main objective of the Extremists during the Indian National Movement?			
Ans	A). To attain complete independence (Swaraj)	B). To bring social reforms	C). To promote British goods in India	D). To expand the legislative councils
Correct Answer: A				
Q.46	Who among the following inaugurated the 38th National Games held in Dehradun in January 2025?			
Ans	A). Pushkar Singh Dhami	B). Anurag Thakur	C). Droupadi Murmu	D). Narendra Modi
Correct Answer: D				
Q.47	What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?			
Ans	A). Repeats the last action	B). Opens the Find and Replace dialog	C). Refreshes the worksheet	D). Toggles between absolute and relative references
Correct Answer: D				
Q.48	If an object is dropped from rest, what will be its velocity after 15 seconds? ($g = 9.8 \text{ m/s}^2$)			
Ans	A). 149 m/s	B). 147 m/s	C). 145 m/s	D). 143 m/s
Correct Answer: B				
Q.49	If the absolute refractive index of a medium is less than 1, it means _____.			
Ans	A). the medium absorbs all light	B). the medium is a perfect reflector	C). light travels faster in that medium than in vacuum	D). light travels slower in that medium than in vacuum
Correct Answer: C				
Q.50	The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.			
Ans	A). bacterium	B). nitrate	C). phosphate	D). chloride
Correct Answer: A				

Q.1	Which transmission voltage level is commonly used for bulk power transmission over medium distances?			
Ans	A). Ultra-High Voltage (UHV)	B). Medium Voltage (MV)	C). Low Voltage (LV)	D). High Voltage (HV)
Correct Answer: D				
Q.2	A 3-phase, 10 kV distribution line delivers power to a load at a 0.8 power factor lagging. If the current is 50 A, and the load resistance and reactance per km are 0.15Ω and 0.2Ω, respectively, for a 400 m line, what is the approximate voltage drop per phase (in V/phase)?			
Ans	A). $0 + j10$	B). $1 + j10$	C). $4.8 + j1.4$	D). $1 + j5$
Correct Answer: C				
Q.3	Which of the following are the two major elements required for Resistance Welding?			
Ans	A). Arc and time	B). Current and pressure	C). Current and resistance	D). Arc and pressure
Correct Answer: B				

Q.4 Identify the correct statement related to the P-N junction diode.

- Ans** A). The forward current of the diode is equal to reverse saturation current of the diode.
B). The forward current of the diode is greater than reverse saturation current of the diode.
C). The reverse saturation current of the diode is always zero.
D). The forward current of the diode is less than the reverse saturation current of the diode.

Correct Answer: B

Q.5 Arrange the circuits in ascending order as per the number of diodes required to realise the circuit.

- a. Full wave bridge rectifier circuit
b. Half wave rectifier circuit
c. Centre tapped full wave rectifier circuit

- Ans** A). b-c-a B). a-c-b C). c-a-b D). a-b-c

Correct Answer: A

Q.6 Which of the following is NOT correct when high-voltage leads are eliminated in potential transformer (PT) bushings?

- Ans** A). Decreases size and weight of the PT B). Increases the risk of short circuits
C). Measures line-to-ground voltages in a three-phase system D). Reduces overall cost of the transformer

Correct Answer: B

Q.7 Which of the following modifications increases the ratio of full load torque to maximum torque in an induction motor?

- Ans** A). Decreasing supply voltage B). Decreasing rotor resistance C). Increasing stator resistance D). Increasing rotor resistance

Correct Answer: D

Q.8 According to Lenz's law, what does the secondary current in a transformer produce?

- Ans** A). A magnetizing effect B). An EMF to oppose the primary voltage C). A back EMF that resists the load D). A demagnetizing effect

Correct Answer: D

Q.9 From the right-hand rule, if we know the direction of magnetic field encircling a conductor or the magnetic polarity of a coil, we can determine the:

- Ans** A). direction of MMF B). direction of flux C). direction of EMF D). direction of current

Correct Answer: D

Q.10 Energy stored in an inductor is given by: (Given L is inductance, I is current, N is number of turns of coil, A is area of cross section, μ is permeability of flux and Φ is flux)

- Ans** A). $\frac{\mu N^2 A}{L}$ B). $L \frac{di}{dt}$ C). $\frac{N\Phi}{I}$ D). $\frac{1}{2} LI^2$

Correct Answer: D

Q.11 Increasing the resistance R in a parallel RLC circuit will ____.

- Ans** A). increase resonance frequency B). increase the bandwidth C). decrease the bandwidth D). have no effect on bandwidth

Correct Answer: C

Q.12 Why do modern steam power plants use a regenerative feedwater heating system?

- Ans** A). It helps improve efficiency by reusing heat, so less fuel is needed. B). It helps keep turbine blades cooler.
C). It makes the combustion process more effective. D). It is mainly used to produce high-pressure steam.

Correct Answer: A

Q.13 What is the primary characteristic of a Zener diode that distinguishes it from a regular diode?

- Ans** A). Sharp breakdown voltage and ability to regulate voltage B). Low forward voltage drop C). High reverse breakdown voltage
D). High forward current rating

Correct Answer: A

Q.14 In a Schering Bridge, if the known capacitor $C_2 = 500$ pF, known resistor $R_3 = 5$ k Ω , and the balancing resistor $R_4 = 1$ M Ω , what is the value of the unknown capacitor C_x ?

- Ans** A). 10 pF B). 100 nF C). 50 pF D). 1 pF

Correct Answer: B

Q.15 What is a key factor in selecting street light pole structures?

- Ans** A). Focusing only on the aesthetic design of the pole. B). The height, material, and durability to withstand environmental conditions.
C). Ignoring wind load calculations to reduce costs. D). The colour of the pole.

Correct Answer: B

Q.16	By which of the following is the welding current in an AC welding transformer controlled?			
Ans	A). Increasing the primary voltage	B). Varying the magnetic flux	C). Using an electric motor	D). Changing the output current
Correct Answer: B				
Q.17	Which of the following applications makes use of capacitor?			
Ans	A). Transformer	B). Microwave	C). Electric vehicle	D). Toaster
Correct Answer: C				
Q.18	For accurate voltage regulation calculation in a transformer, which of the following must remain constant?			
Ans	A). Output (secondary) voltage	B). Core losses	C). Load power factor	D). Applied (primary) voltage
Correct Answer: D				
Q.19	In an inductor, if flux is maintained constant, _____ EMF will be induced.			
Ans	A). no	B). infinite	C). positive	D). negative
Correct Answer: A				
Q.20	How are outdoor streetlight installations typically classified?			
Ans	A). Based on the colour of the light fixtures	B). Based on the cost of the light fixtures only	C). Based on the aesthetic design of the poles	D). Based on the type of light source, mounting height, and application (e.g., residential, highway, or industrial areas)
Correct Answer: D				
Q.21	What is the function of the armature core in relation to the magnetic circuit?			
Ans	A). To cool the armature conductors	B). To convert electrical energy into mechanical energy	C). To ensure electrical conductors do not short-circuit	D). To complete the magnetic circuit through the yoke and poles
Correct Answer: D				
Q.22	The Q-factor of a resonant circuit is 100. If the resonant frequency is 1 MHz, what is the bandwidth?			
Ans	A). 10 MHz	B). 100 kHz	C). 1 kHz	D). 10 kHz
Correct Answer: D				
Q.23	Self inductance of a coil is directly proportional to the:			
Ans	A). flux and the current flowing in the coil	B). current flowing in the coil only	C). flux and number of turns of the coil	D). number of turns and the current flowing in the coil
Correct Answer: C				
Q.24	In a parallel RLC circuit, if the inductive current I_L is greater than the capacitive current I_C, then _____.			
Ans	A). $X_C > X_L$	B). $X_C = X_L$	C). $X_C < X_L$	D). circuit is at resonance
Correct Answer: C				
Q.25	In a street lighting ring network, what is the primary reason for considering voltage drop?			
Ans	A). To maximise current flow	B). To decrease conductor resistance	C). To increase power loss for efficiency	D). To ensure all lights receive equal brightness
Correct Answer: D				
Q.26	If the resistance (R) in a parallel RLC circuit increases, the quality factor (Q) will _____.			
Ans	A). remain the same	B). become zero	C). decrease	D). increase
Correct Answer: D				
Q.27	Which of the following methods is NOT used for low resistance measurement?			
Ans	A). Potentiometer method	B). Loss of Charge method	C). Ammeter-Voltmeter method	D). Kelvin Double Bridge method
Correct Answer: B				
Q.28	What does the 'Rate of Rise of Restriking Voltage (RRRV)' in circuit breakers refer to?			
Ans	A). The rate at which the voltage across the breaker contacts rises after current interruption	B). The rate at which the fault current increases in the system	C). The rate at which the breaker contacts close during normal operation	D). The speed at which the circuit breaker operates during a fault
Correct Answer: A				
Q.29	How does the spear valve inside the nozzle enhance the operational efficiency of a Pelton turbine?			
Ans	A). By dynamically adjusting the jet velocity to match load demand	B). By diverting the water jet away from the buckets when needed	C). By storing excess kinetic energy for later use	D). By creating turbulence to improve energy dissipation
Correct Answer: A				

Q.30	Which type of electrode is used in Carbon Arc Welding (CAW)?			
Ans	A). Aluminum coated electrode	B). Copper coated electrode	C). Tungsten electrode	D). Graphite electrode Correct Answer: D
Q.31	Which gas is used to aid the starting process in Metal Halide Lamps?			
Ans	A). Carbon dioxide	B). Nitrogen	C). Argon	D). Neon Correct Answer: C
Q.32	Which statements about the maximum power output of a cylindrical rotor synchronous generator are correct?			
	I. Maximum power output occurs when the load angle (δ) is 90°. II. Maximum power is proportional to the square of the terminal voltage (V). III. Over-excitation increases the generator's maximum power capability. IV. Maximum power is independent of the synchronous reactance (X_s).			
Ans	A). Statements I and III only are correct.	B). Statements II and IV only are correct.	C). Statements II and III only are correct.	D). Statements I and IV only are correct. Correct Answer: A
Q.33	What is the primary function of 'Percentage Differential Protection' in an alternator?			
Ans	A). To detect and protect against internal faults within the alternator windings B). To detect and protect against external faults in the connected power system C). To monitor the voltage regulation of the alternator D). To protect against overloading of the alternator			Correct Answer: A
Q.34	Crawling typically causes an induction motor to operate at a speed that is:			
Ans	A). a fraction (e.g. 1/3) of synchronous speed	B). double the synchronous speed	C). equal to synchronous speed	D). slightly below synchronous speed under full load Correct Answer: A
Q.35	The use of electronic ballasts in CFLs helps to eliminate:			
Ans	A). slow starting and flickering	B). overheating	C). excessive brightness	D). high voltage consumption Correct Answer: A
Q.36	If the number of parallel paths (A) in a DC generator is increased, the generated EMF will:			
Ans	A). decrease	B). remain the same	C). increase	D). become zero Correct Answer: B
Q.37	Why is the simple brake test generally used for small motors only?			
Ans	A). The simple brake test does not work with large motors. B). Large motors have lower efficiency. C). Large motors produce excessive heat that is difficult to dissipate. D). Small motors do not require cooling.			Correct Answer: C
Q.38	In an alternator, if the load power factor changes from lagging to leading, the armature reaction effect shifts from:			
Ans	A). demagnetising to magnetising	B). magnetising to cross-magnetising	C). cross-magnetising to demagnetising	D). demagnetising to cross-magnetising Correct Answer: A
Q.39	What effect does excessive heat in a transformer have on its windings?			
Ans	A). It reduces insulation resistance and can cause damage. B). It increases transformer efficiency. C). It improves insulation performance. D). It has no significant effect.			Correct Answer: A
Q.40	The Buchholz relay is connected between which two parts of the transformer?			
Ans	A). Magnetic core and armature	B). Primary terminal and secondary terminal	C). Transformer oil tank and conservator tank	D). Primary winding and secondary winding Correct Answer: C
Q.41	In a transistor amplifier, the composition of the current in any branch during operation is:			
Ans	A). the sum of AC and DC	B). DC only	C). AC only	D). the multiplication of AC and DC Correct Answer: A
Q.42	If the capacitance in a series RLC circuit is increased, the Q-factor will _____.			
Ans	A). increase	B). decrease	C). remain unchanged	D). depend on frequency Correct Answer: B
Q.43	The material commonly used as resistance wire in heating elements is:			
Ans	A). copper	B). aluminium	C). nichrome	D). silver Correct Answer: C

Q.44 The RMS value of voltage (V_{rms}) in a purely resistive AC circuit is related to peak voltage (V_m) by _____.

- Ans A). $V_{rms} = \frac{\sqrt{2}}{V_m}$ B). $V_{rms} = \sqrt{2} V_m$ C). $V_{rms} = \frac{V_m}{\sqrt{2}}$ D). $V_{rms} = V_m$

Correct Answer: C

Q.45 Under constant mechanical load, changing the excitation of a synchronous motor affects which of the following?

- I. Power factor
- II. Armature current magnitude
- III. Speed of the motor
- IV. Real power output

- Ans A). I and IV only B). I and II only C). II and III only D). III and IV only

Correct Answer: B

Q.46 What is the angle that is formed between the incident ray and the normal line called?

- Ans A). Angle of deviation B). Angle of incidence C). Angle of refraction D). Angle of reflection

Correct Answer: B

Q.47 An apartment complex consists of 15 apartments, each with a peak demand of 8 kW. The maximum system demand recorded is 60 kW. What is the diversity factor?

- Ans A). 0.5 B). 3 C). 1.5 D). 2

Correct Answer: D

Q.48 Which type of damping is commonly used in PMMC voltmeters and ammeters?

- Ans A). Spring-controlled damping B). Electromagnetic damping C). Air friction damping D). Fluid friction damping

Correct Answer: B

Q.49 A toroidal coil has a magnetic path length of 30 cm and a magnetic field strength of 750 A/m. The coil current is 250 mA. Determine the number of coil turns.

- Ans A). 900 turns B). 800 turns C). 750 turns D). 625 turns

Correct Answer: A

Q.50 A single-phase AC circuit has a voltage of 230 V and a current of 10 A. What is the apparent power (S)?

- Ans A). 2.3 kVA B). 2.3 kW C). 23 VA D). 2300 VAR

Correct Answer: A

Q.51 In the fabrication of a PNP transistor, what is the primary reason for using a buried layer of heavily doped P+ material beneath the N-type base region?

- Ans A). To increase the emitter injection efficiency B). To reduce the base-emitter voltage C). To reduce the collector-emitter saturation voltage
D). To prevent latchup and improve transistor stability

Correct Answer: D

Q.52 M.M.F in a magnetic circuit is abbreviated as:

- Ans A). Magnetic Force B). Magnetomotive Field C). Magnetic Movement Field D). Magnetomotive Force

Correct Answer: D

Q.53 Which safety factor is most important when designing transmission lines under ice and wind conditions?

- Ans A). Thermal expansion factor B). Electrical safety factor C). Mechanical stress factor D). Magnetic field factor

Correct Answer: C

Q.54 If a residential area has an annual energy consumption of 28,908,000 kWh, what is its average demand?

- Ans A). 3300 kWh B). 2200 kWh C). 3000 kWh D). 3 kWh

Correct Answer: A

Q.55 The work done on a unit N pole in moving once around any single closed path in a magnetic field is equal to _____.

- Ans A). EMF in respective path B). number of turns in respective path C). Ampere turns linked with the path D). current in respective path

Correct Answer: C

Q.56 Why is a radial layout with high voltage drop unsuitable for industrial loads?

- Ans A). It reduces voltage fluctuation. B). Voltage drop increases system reliability. C). It helps maintain constant power factor.
D). Industrial loads require stable voltage level.

Correct Answer: D

Q.57 What is the relationship between back EMF and the supply voltage in a DC motor?

- Ans A). Back EMF is directly proportional to the supply voltage. B). Back EMF is equal to the supply voltage.
C). Back EMF is independent of the supply voltage. D). Back EMF opposes the supply voltage.

Correct Answer: D

Q.58 In a series magnetic circuit, _____ flux ϕ flows through each part of the circuit.

- Ans A). the same B). different C). zero D). infinite

Correct Answer: A

Q.59 Which type of transformer is used for stepping down current for measurement purposes?

- Ans A). Current transformer B). Power transformer C). Voltage transformer D). Auto transformer

Correct Answer: A

Q.60 What will be the current relationship in time domain for a capacitive circuit?

- Ans A). $C \frac{d^2 v}{dt^2}$ B). $i(t) = C \frac{dv}{dt}$ C). $i(t) = C \int_0^t v(t)$ D). $i(t) = C \int_0^t v(t) + i(0)$

Correct Answer: B

Q.61 For the full wave rectifier circuit with sinusoidal ac signal as its input, if the peak value of the output signal increases, its rms value of the ac component _____.

- Ans A). increases B). decreases C). remains the same D). becomes zero

Correct Answer: A

Q.62 What is a key consideration in public lighting installations?

- Ans A). Providing adequate illumination while ensuring energy efficiency and safety B). Ignoring maintenance requirements to reduce costs
C). Focusing only on the aesthetic design of the light fixtures D). Ensuring the lighting system operates without any protective devices

Correct Answer: A

Q.63 For a P-N junction diode, the built in barrier potential of the junction is _____ proportional to the doping concentration and _____ proportional to the intrinsic concentration.

- Ans A). inversely; directly B). inversely; inversely C). directly; inversely D). directly; directly

Correct Answer: C

Q.64 The same polarity condition is essential in parallel operation because:

- Ans A). it increases the transformer efficiency B). it reduces the transformer losses C). it helps with voltage regulation
D). it ensures that the transformers are not damaged due to reverse currents

Correct Answer: D

Q.65 Which of the following is a major disadvantage of the De Sauty Bridge?

- Ans A). It does not consider the dielectric losses in capacitors. B). It requires both resistors and inductors for balance.
C). It cannot be used to measure very small capacitances. D). It requires an AC power source.

Correct Answer: A

Q.66 Which application is a common use of synchronous motors?

- Ans A). Electric cranes B). Power factor correction C). Household fans D). Portable drills

Correct Answer: B

Q.67 What is the primary purpose of 'Thermal Overheating Protection' in a transformer?

- Ans A). To protect against overvoltage conditions in the power system
B). To detect and protect against short circuits in the transformer windings
C). To monitor and prevent excessive temperature rise in the transformer D). To detect faults in the transformer cooling system

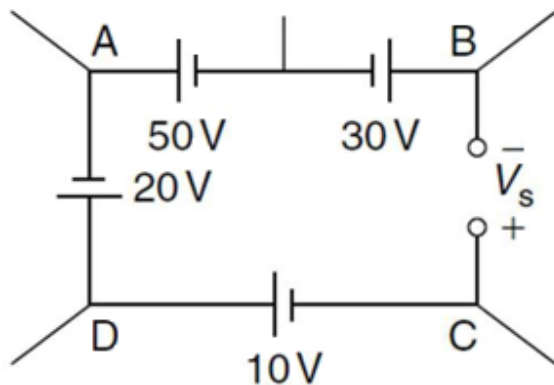
Correct Answer: C

Q.68 Ferrites are ferromagnetic ceramics which have a fairly constant _____.

- Ans A). relative permeability B). magnetic susceptibility C). hysteresis loss D). frequency response

Correct Answer: A

Q.69 Find the voltage V_s in the circuit by using Kirchoff's Voltage Law.



Ans A). 10 V

B). 20 V

C). 30 V

D). 50 V

Correct Answer: C

Q.70 Which of the following is a key requirement of a protective relay in terms of reliability?

Ans A). The relay must operate only when a fault occurs and remain stable during normal conditions.

B). The relay must have a complex design to handle multiple fault types.

C). The relay must reset immediately after a fault is cleared.

D). The relay must operate with a significant time delay to ensure coordination.

Correct Answer: A

Q.71 Which of the following is a fundamental principle for electrical installations, according to safety standards?

Ans A). Electrical circuits must be designed to operate without any protective devices

B). Electrical installations must ensure protection against electric shock, overcurrent and fault currents

C). Electrical systems should prioritise cost over safety considerations D). Electrical installations do not require grounding or earthing systems

Correct Answer: B

Q.72 Which of the following best describes the role of a Time-of-Day (ToD) Tariff in energy conservation?

Ans A). It applies only to industrial consumers and has no impact on residential users.

B). It eliminates the need for load management by ensuring a constant energy supply.

C). It increases electricity costs uniformly throughout the day, regardless of demand variations.

D). It encourages consumers to shift electricity usage to off-peak hours, reducing peak demand and improving grid efficiency.

Correct Answer: D

Q.73 Compared to the MMF method, the EMF method is _____.

Ans A). only used for DC generators

B). less accurate due to assuming constant Z_s

C). more accurate due to accounting for saturation

D). independent of load power factor

Correct Answer: B

Q.74 In the equivalent circuit without core losses, the magnetising branch consists of _____.

Ans A). R_c in parallel with X_m

B). X_m in series with R_c

C). X_m alone

D). R_c alone

Correct Answer: C

Q.75 Force on a current-carrying conductor will be _____ when it is placed at right angles to the direction of the magnetic field.

Ans A). minimum

B). zero

C). maximum

D). infinite

Correct Answer: C

Q.76 Why are salient pole rotors NOT used in turbo alternators?

Ans A). Mechanical instability at high speeds

B). Inefficient cooling

C). High copper losses

D). Low mechanical strength

Correct Answer: A

Q.77 If the frequency of an AC source connected to a pure capacitor is doubled, the capacitive reactance will _____.

Ans A). decrease by half

B). double

C). increase four times

D). remain unchanged

Correct Answer: A

Q.78 If the peak voltage of a full-wave rectifier is 20 V, what is the average output voltage?

Ans A). $\frac{\pi}{20}$ V

B). $\frac{\pi}{40}$ V

C). $\frac{20}{\pi}$ V

D). $\frac{40}{\pi}$ V

Correct Answer: D

Q.79	Maxwell's Inductance-Capacitance Bridge uses a standard capacitor to measure which of the following?			
Ans	A). Inductance	B). High resistance	C). Capacitance	D). Low resistance
Correct Answer: A				
Q.80	A sinusoidal voltage is given by $v(t)=100 \sin(\omega t+30^\circ)$. What is the corresponding phasor representation?			
Ans	A). $100\angle -30^\circ$	B). $100\angle 0^\circ$	C). $100\angle 90^\circ$	D). $100\angle 30^\circ$
Correct Answer: D				
Q.81	A parallel RLC circuit has an inductance of 1 H and a capacitance of 1 μF. What is the resonant frequency (f_0)?			
Ans	A). $\frac{1}{\pi \times 10^{-3}}$ Hz	B). $\frac{1}{\pi}$ Hz	C). $\frac{1}{2\pi}$ Hz	D). $\frac{1}{2\pi \times 10^{-3}}$ Hz
Correct Answer: D				
Q.82	Which of the following factors determines the selection of voltage levels in primary and secondary transmission?			
Ans	A). Type of power generation used	B). Only the type of transformers used	C). Only the number of consumers connected	D). Distance of transmission and power demand
Correct Answer: D				
Q.83	Current $I(s)$ in RL circuit is given as $I(s)=\frac{1.5}{s+4}$. Obtain $i(t)$ for $t > 0$.			
Ans	A). $1.5e^{4t}$	B). $1.5e^{-4t}$	C). $1.5t$	D). $1.5e^t$
Correct Answer: B				
Q.84	In distribution transformers, the explosion vent is designed to:			
Ans	A). improve the cooling system B). control oil pressure C). release pressure in case of excessive buildup D). monitor transformer oil quality			
Correct Answer: C				
Q.85	In a ring distribution system, if one section of the ring experiences a fault and is disconnected, how does this affect the voltage drop at the loads connected to the remaining operational sections?			
Ans	A). Voltage drop fluctuates randomly due to load redistribution. B). Voltage drops decreases as the fault reduces overall system impedance. C). Voltage drop remains unchanged since power is still supplied from two directions. D). Voltage drops increases because the system now operates like a radial system in that section.			
Correct Answer: C				
Q.86	What does the flux created by the load current in the primary winding, which links only with the primary winding, represent?			
Ans	A). Induced flux	B). Magnetic flux	C). Leakage flux	D). Mutual flux
Correct Answer: C				
Q.87	Which of the following is a characteristic of a group drive system?			
Ans	A). Minimal energy loss	B). Low capital cost	C). High flexibility in operation	D). High maintenance cost
Correct Answer: B				
Q.88	If two AC waveforms have a phase difference of 0°, they are said to be ____.			
Ans	A). lagging	B). out of phase	C). in phase	D). leading
Correct Answer: C				
Q.89	Which statements about voltage drop in an alternator are correct?			
	I. The voltage drop due to armature resistance ($I_a R_a$) is in phase with the armature current (I_a). II. At unity power factor, the voltage drop $I_a R_a$ directly subtracts from the generated EMF (E). III. For a leading power factor load, $I_a R_a$ contributes to an increase in terminal voltage (V). IV. Armature resistance has no effect on voltage regulation.			
Ans	A). Statements III and IV only are correct. B). Statements I and II only are correct. C). Statements II and III only are correct. D). Statements I and IV only are correct.			
Correct Answer: B				
Q.90	How are the segments of the commutator insulated from each other?			
Ans	A). Using thin layers of mica	B). Using air gaps	C). Using thick layers of rubber	D). Using metal sheets
Correct Answer: A				

Q.91 Which of the following options best describes the role of a gasifier in an agro-chemical-based power plant?

- Ans A). It directly burns biomass to produce heat. B). It converts solid biomass into a combustible gas through partial oxidation.
C). It stores chemical fertilisers for energy production. D). It condenses steam to generate electricity.

Correct Answer: B

Q.92 If a 6-pole induction motor operates on a 60 Hz supply, its synchronous speed is _____.

- Ans A). 7200 rpm B). 1200 rpm C). 2400 rpm D). 3600 rpm

Correct Answer: B

Q.93 A diode rectifier circuit has an AC input voltage of 230 Vrms and a load resistance of 1 kΩ. If the diode is ideal and the circuit is a half-wave rectifier, what is the Peak Inverse Voltage (PIV) across the diode?

- Ans A). 230 V B). 460 V C). 325 V D). 650 V

Correct Answer: C

Q.94 Why does a single large generating unit lead to higher generating costs per unit?

- Ans A). It eliminates the need for maintenance. B). It has zero fuel consumption. C). It always operates at maximum efficiency.
D). It operates inefficiently during periods of low demand.

Correct Answer: D

Q.95 What is the primary scope of the National Electric Code (NEC) 2011?

- Ans A). To focus exclusively on renewable energy systems B). To define standards for power generation and transmission only
C). To provide guidelines for the design and installation of electrical systems to ensure safety and reliability
D). To regulate the manufacturing of electrical appliances and devices

Correct Answer: C

Q.96 What is the reflection of light from a smooth and shiny surface like a mirror called?

- Ans A). Spread reflection B). Irregular reflection C). Specular reflection D). Diffuse reflection

Correct Answer: C

Q.97 Which type of transformer is used for stepping down current for measurement purposes?

- Ans A). Power transformer B). Auto transformer C). Current transformer D). Voltage transformer

Correct Answer: C

Q.98 For a P-N junction diode, with increase in the reverse bias potential, the width of the depletion region _____ and the transition capacitance _____.

- Ans A). increases; increases B). decreases; decreases C). decreases; increases D). increases; decreases

Correct Answer: D

Q.99 Which of the following types of engines is most commonly adapted to run on liquid biomass fuels?

- Ans A). Stirling engine B). Jet engine C). Fuel cell engine D). Internal combustion engine

Correct Answer: D

Q.100 In a three-phase system, the sum of the three phase voltage phasors in a balanced system is _____.

- Ans A). maximum at resonance B). zero C). equal to the line voltage D). equal to the phase voltage

Correct Answer: B



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Mechanical and Allied Engineering

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 Which of the following **CANNOT** be considered as a measure to control global warming?

Ans A). Efficiently using energy B). Cutting down use of fossil fuel C). Reduction in emission of greenhouse gases D). Causing deforestation

Correct Answer: D

Q.2 What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?

Ans A). 12% of Lok Sabha strength B). 10% of Lok Sabha strength C). 15% of Lok Sabha strength D). 20% of Lok Sabha strength

Correct Answer: C

Q.3 What is the net force acting on an object if balanced forces are applied?

Ans A). Equal to the mass of the object B). Zero C). Equal to acceleration D). Infinite

Correct Answer: B

Q.4 Which of the following is **NOT** a source of release of smokestacks?

Ans A). Rivers B). Smelters C). Thermal power plants D). Industries

Correct Answer: A

Q.5 What is the primary purpose of using a firewall on a Personal Computer?

Ans A). To increase storage space B). To block unauthorised access and protect the computer C). To clean up temporary files D). To speed up internet connectivity

Correct Answer: B

Q.6 The energy that is derived from the use of radioactive isotopes is termed as _____.

Ans A). thermal energy B). solar energy C). geothermal energy D). nuclear energy

Correct Answer: D

Q.7 The fine powder that is obtained from the modified and recycled form of plastic is called _____.

Ans A). polyblend B). polystyrene C). polyethylene D). polythene

Correct Answer: A

Q.8 Which of the following is **NOT** toxic to non-target organisms in the soil?

Ans A). Organic fertilisers B). Pesticides C). Herbicides D). Fungicides

Correct Answer: A

Q.9 What does PCB stand for?

Ans A). Processing Circuit Board B). Peripheral Connection Bus C). Primary Control Board D). Printed Circuit Board

Correct Answer: D

Q.10 Which of the following is NOT a component of a CPU?

Ans A). Arithmetic Logic Unit (ALU) B). Hard Disk C). Cache Memory D). Control Unit (CU)

Correct Answer: B

Q.11 In which of the following regions the Himalayas has the greatest width?

Ans A). Sikkim B). Kashmir C). Himachal Pradesh D). Arunachal Pradesh

Correct Answer: B

Q.12 Which official in the Gupta administration was responsible for peace and war matters?

Ans A). Vishayapati B). Sandhi-Vigrahika C). Mahapratihara D). Mahadandanayaka

Correct Answer: B

Q.13 Which of the following is a characteristic difference between colloids and true solutions?

Ans A). True solutions have visible solute particles, whereas colloids have invisible dispersed particles.
B). True solutions have a single-phase system, whereas colloids have a two-phase system.
C). True solutions exhibit Brownian motion, but colloids do not. D). True solutions show the Tyndall effect, but colloids do not.

Correct Answer: B

Q.14 Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?

Ans A). Chennai B). New Delhi C). Mumbai D). Kolkata

Correct Answer: B

Q.15 The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.

Ans A). chloride B). nitrate C). bacterium D). phosphate

Correct Answer: C

Q.16 What is the first step to securing ones smartphone or tablet?

Ans A). Setting a password/PIN-protected lock screen B). Turning off mobile data C). Using only free Wi-Fi networks D). Installing more apps

Correct Answer: A

Q.17 What is the approximate pH of a neutral salt solution?

Ans A). Less than 7 B). Depends on the temperature C). More than 7 D). Equal to 7

Correct Answer: D

Q.18 Why does a bee sting cause pain and irritation?

Ans A). The sting releases carbon dioxide gas. B). The sting injects a mild sugar solution. C). The sting injects methanoic acid.
D). The sting contains a strong base.

Correct Answer: C

Q.19 If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.

Ans A). Bcc B). Cc C). Subject D). To

Correct Answer: B

Q.20 What is the purpose of the Collation option in the Print settings?

Ans A). To print all the pages of a document as a set B). To select a custom print range C). To adjust the page orientation
D). To change the printer selection

Correct Answer: A

Q.21 The Rudra Veena is predominantly associated with which genre of Hindustani music?

Ans A). Thumri B). Dhrupad C). Khayal D). Ghazal

Correct Answer: B

Q.22 Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?

Ans A). $\text{Al}(\text{SO}_4)_3$ B). Al_2SO_4 C). $\text{Al}_2(\text{SO}_4)_3$ D). $\text{Al}_3(\text{SO}_4)_2$

Correct Answer: C

Q.23 Which of the following states is NOT covered under the Atal Bhujal Yojana?

Ans A). Maharashtra B). Rajasthan C). Jharkhand D). Uttar Pradesh

Correct Answer: C

Q.24	The phenomenon of multiple echoes due to repeated reflections is called _____.			
Ans	A). resonance	B). refraction	C). diffraction	D). reverberation
Correct Answer: D				
Q.25	If the absolute refractive index of a medium is less than 1, it means _____.			
Ans	A). light travels faster in that medium than in vacuum	B). the medium is a perfect reflector	C). the medium absorbs all light	D). light travels slower in that medium than in vacuum
Correct Answer: A				
Q.26	The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?			
Ans	A). 2008	B). 2015	C). 2005	D). 2014
Correct Answer: B				
Q.27	Which defect of vision occurs due to the weakening of ciliary muscles with age?			
Ans	A). Astigmatism	B). Hypermetropia	C). Myopia	D). Presbyopia
Correct Answer: D				
Q.28	Which state of matter shows the highest expansion when temperature is increased?			
Ans	A). Solids	B). Gases	C). Liquids	D). Plasma
Correct Answer: B				
Q.29	What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?			
Ans	A). Opens the Find and Replace dialog	B). Toggles between absolute and relative references	C). Repeats the last action	D). Refreshes the worksheet
Correct Answer: B				
Q.30	The main use of chlorofluorocarbons is in _____.			
Ans	A). smog	B). chimneys	C). refrigerants	D). vehicles
Correct Answer: C				
Q.31	Which of the following is the correct way to insert a new column in a spreadsheet?			
Ans	A). Go to Home > Insert > Insert Sheet Columns.	B). Go to File > New > Column.	C). Use Ctrl + Z to insert a column.	D). Press Ctrl + X and then Insert.
Correct Answer: A				
Q.32	What is the shortcut key to start a slideshow from the beginning?			
Ans	A). F5	B). Alt + Tab	C). Shift + F5	D). Ctrl + P
Correct Answer: A				
Q.33	Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?			
Ans	A). Amazon	B). Meta	C). Microsoft	D). Google
Correct Answer: B				
Q.34	What is India's global military ranking in the 2025 Global Firepower (GFP) index?			
Ans	A). 5 th	B). 2 nd	C). 4 th	D). 3 rd
Correct Answer: C				
Q.35	What happens when an acid reacts with a metal oxide?			
Ans	A). Only salt is formed.	B). A salt and hydrogen gas are formed.	C). A salt and water are formed.	D). Only water is formed.
Correct Answer: C				
Q.36	Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?			
Ans	A). Directive Principles of State Policy	B). Fundamental Rights	C). Preamble	D). Fundamental Duties
Correct Answer: A				
Q.37	If an object is dropped from rest, what will be its velocity after 15 seconds? (g = 9.8 m/s ²)			
Ans	A). 143 m/s	B). 149 m/s	C). 145 m/s	D). 147 m/s
Correct Answer: D				
Q.38	What happens when a computer is put into Sleep mode?			
Ans	A). It shuts down completely.	B). It stores data on the hard drive and powers off.	C). It restarts automatically after a few minutes.	D). It keeps the session active in RAM while using minimal power.
Correct Answer: D				

Q.39	The glass panel used in greenhouses is known to retain _____.			
Ans	A). humidity	B). heat	C). pH	D). rainfall
Correct Answer: B				
Q.40	Inertia depends on which property of an object?			
Ans	A). Shape	B). Acceleration	C). Velocity	D). Mass
Correct Answer: D				
Q.41	The practice of Jhum cultivation is prevalent in the _____.			
Ans	A). South west	B). North west	C). North east	D). South east
Correct Answer: C				
Q.42	Which of the following correctly explains why clothes dry faster on a windy day?			
Ans	A). Wind decreases the temperature of the water molecules. B). Wind removes the water vapour from the clothes' surroundings. C). Wind increases the humidity around the clothes. D). Wind reduces the surface area of the clothes.			
Correct Answer: B				
Q.43	The maximum sound is generated _____.			
Ans	A). from vehicular emissions B). from house chimneys C). from industrial smoke D). by the take off of a jet plane			
Correct Answer: D				
Q.44	Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.			
Ans	A). $Mg(PO_4)_3$	B). $Mg_3(PO_4)_2$	C). $Mg_2(PO_4)_3$	D). $MgPO_4$
Correct Answer: B				
Q.45	What was the main objective of the Extremists during the Indian National Movement?			
Ans	A). To attain complete independence (Swaraj) B). To promote British goods in India C). To expand the legislative councils D). To bring social reforms			
Correct Answer: A				
Q.46	According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?			
Ans	A). 27.5%	B). 20%	C). 25.7%	D). 15.5%
Correct Answer: C				
Q.47	The Industrial Policy Resolution of 1956 categorised industries into how many groups?			
Ans	A). Five	B). Three	C). Nine	D). Seven
Correct Answer: B				
Q.48	Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?			
Ans	A). Article 88	B). Article 78	C). Article 53	D). Article 77
Correct Answer: A				
Q.49	In an electric circuit, what is the correct way to connect an ammeter?			
Ans	A). In either series or parallel B). In parallel with the component C). In series with the component D). In parallel with the source			
Correct Answer: C				
Q.50	Who among the following inaugurated the 38 th National Games held in Dehradun in January 2025?			
Ans	A). Narendra Modi	B). Pushkar Singh Dhami	C). Anurag Thakur	D). Droupadi Murmu
Correct Answer: A				

Q.1 Which of the following is NOT a mechanical finishing process?				
Ans A). Burnishing B). Pickling C). Shot peening D). Buffing Correct Answer: B				
Q.2 Which of the following is used in organic coating as catalysts that speed up the cure reaction?				
Ans A). Colloidal stabilisers B). UV stabilisers C). Plasticisers D). Cure additives Correct Answer: D				
Q.3 In a two-stroke petrol engine, which of the following best describes the sequence of events during an exhaust stroke?				
Ans A). The exhaust port opens first, followed by the transfer port. B). Both ports open simultaneously. C). The transfer port opens first, followed by the exhaust port. D). The exhaust port opens and closes before the transfer port opens.				
Correct Answer: A				

Q.4 Pressure head in a fluid system is best described as:

- Ans** A). the kinetic energy per unit weight of the fluid B). the difference between absolute and gauge pressure
C). the height of a fluid column equivalent to the pressure exerted by the fluid D). the rate of fluid flow per unit cross-sectional area

Correct Answer: C

Q.5 If torsional rigidity increases in the torsion equation, then the:

- Ans** A). angle of twist first increases then decreases B). angle of twist decreases C). angle of twist increases
D). angle of twist remains constant

Correct Answer: B

Q.6 Class ____ items are those that are 30-40% of all inventory items, and account for 30-40% of the total rupee consumption volume of the inventory. These are important, but not critical, and do NOT pose sourcing difficulties.

- Ans** A). B B). C C). X D). A

Correct Answer: A

Q.7 Which of the following is the function of hose pipes in the gas welding process?

- Ans** A). Protects the eyes from harmful heat and ultraviolet rays B). Supplies the gases from the pressure regulators
C). Mixes oxygen and acetylene in the correct proportion D). Removes the oxide film and maintains a clean surface

Correct Answer: B

Q.8 What is the function of shielding gas in Gas Tungsten Arc Welding (GTAW)?

- Ans** A). Protects the consumable coated electrode and the molten metal weld pool from the atmospheric contamination
B). Protects the tungsten electrode and the molten metal weld pool from the atmospheric contamination
C). Removes the slag by striking and conducts current to pass through it
D). Protects the consumable bare electrode and the molten metal weld pool from the atmospheric contamination

Correct Answer: B

Q.9 In four-stroke diesel engine, which valves are closed during the expansion stroke?

- Ans** A). Only the exhaust valve B). Neither inlet valve nor exhaust valve C). Only the inlet valve D). Both inlet and exhaust valves

Correct Answer: D

Q.10 What is the basic essential condition for coating material in hot dipping?

- Ans** A). It should have a higher melting point than the base metal. B). It should form an alloy at the interface with the base metal.
C). It should completely evaporate during the process. D). It should have lower wettability.

Correct Answer: B

Q.11 Which of the following assumptions is essential for applying Bernoulli's theorem?

- Ans** A). The flow is steady, incompressible and frictionless. B). The fluid is viscous and incompressible. C). The fluid has high compressibility.
D). The flow is turbulent and rotational.

Correct Answer: A

Q.12 Identify the class A items as per the ABC analysis in inventory.

- Ans** A). The next 15-25% account for 10-20% of the consumption B). The balance 65-75% account for 70-80% of the consumption
C). The balance 65-75% account for 5-10% of the consumption D). 10-20% of the items account for 70-80% of the consumption

Correct Answer: D

Q.13 What is the number of divisions on the vernier scale of a Universal Bevel Protractor?

- Ans** A). 46 B). 70 C). 60 D). 24

Correct Answer: D

Q.14 A symmetrical T-section has its flange horizontal on top. Its dimensions are: Flange: Width = 100 mm, thickness = 24 mm; Web: Height = 84 mm, thickness = 20 mm. Its moment of inertia about a vertical axis through its centroid parallel to the web is (in mm⁴):

- Ans** A). 2056×10^3 B). 431×10^4 C). 451×10^4 D). 384,0000

Correct Answer: A

Q.15 A symmetrical planar built-up section consists of two channel sections joined together at the tips of their flanges to form a closed rectangular area. The total width of each flange is 'B'. Each web is 'w' units deep inside, 'D' units deep at its outside (longer) face, and 'b' units thick. The moment of inertia of the composite section about its centroidal axis perpendicular to the webs is given by:

Ans A). $\frac{BD^3}{12} - \frac{(B - b)w^3}{12}$ B). $\frac{BD^3}{12} - \frac{Bw^3}{3}$ C). $\frac{BD^3}{12} + \frac{(B - b)w^3}{3}$ D). $\frac{BD^3}{6} - \frac{(B - b)w^3}{6}$

Correct Answer: D

Q.16 In an air standard cycle, heat addition is assumed to occur _____.

Ans A). from an external constant high-temperature source B). through internal combustion of fuel C). by direct contact with a flame
D). from a combination of chemical reactions and external sources

Correct Answer: A

Q.17 Which of the following movements of the grinding wheel is possible in a chucking-type internal grinder?

Ans A). Only rotational movement B). Only vibrational movement C). Both rotational and reciprocating movement
D). Only reciprocating movement

Correct Answer: C

Q.18 In which type of welding flame is oxygen proportion more compared to acetylene proportion?

Ans A). Reducing welding flame B). Carburising welding flame C). Oxidising welding flame D). Neutral welding flame

Correct Answer: C

Q.19 What is the impact of effective preplanning on the economic efficiency of a manufacturing operation?

Ans A). Prevention of the production of large uneconomic output B). Increase in the complexity of the production process
C). Elimination of the need for any forecasting D). Focus on the design of jigs and tools

Correct Answer: A

Q.20 Given an annual usage value of 400 units, the procurement cost is ₹20 per order, cost per piece is ₹100 and cost of carrying inventory is 10%. Calculate the EOQ.

Ans A). 60 B). 40 C). 30 D). 50

Correct Answer: B

Q.21 According to the Principle of Resolution, the algebraic sum of the resolved parts of multiple forces in a given direction is equal to:

Ans A). the difference between the largest and smallest force B). the sum of all forces acting in that direction
C). the total magnitude of all forces combined D). the resolved part of their resultant in the same direction

Correct Answer: D

Q.22 The vaned diffuser in a centrifugal pump serves to:

Ans A). accelerate the fluid B). reduce cavitation by increasing turbulence C). control the pump's rotational speed
D). convert kinetic energy into pressure energy

Correct Answer: D

Q.23 What is the complete form of 'LVDT', one of the most popular electromechanical comparators?

Ans A). Longitudinal variable differential transformer B). Linear variable dimensional transformer C). Linear variable differential transformer
D). Linear versatile differential transformer

Correct Answer: C

Q.24 Despite having the highest possible efficiency for Carnot cycle, it is not suitable for a practical engine using a gaseous working fluid as:

Ans A). the cycle requires very high pressures that are hard to manage B). it is easy to maintain isothermal processes in practice
C). it is impossible to achieve perfectly reversible processes D). the work output from the cycle is quite low

Correct Answer: C

Q.25 Which of the following hardness scales uses a diamond cone indenter?

Ans A). Mohs scale B). Brinell scale C). Vickers scale D). Rockwell C scale

Correct Answer: D

Q.26 The creep rate in a material increases when:

Ans A). stress is increased B). the temperature is decreased C). the material is stretched D). alloying elements are removed

Correct Answer: A

Q.27 The work done by the load in stretching the bar is known as:

Ans A). Strain Energy B). Potential Energy C). Kinetic Energy D). Dislocation Energy

Correct Answer: A

Q.28 In a dry sump lubrication system, how is oil returned to the storage tank?

Ans A). Centrifugal force separates oil from air. B). A scavenge pump actively pumps oil back. C). Oil remains in the engine block indefinitely.
D). Gravity drains oil directly to the crankcase.

Correct Answer: B

Q.29 What is meant by the resolution of a force?

Ans A). Changing the direction of a force without altering magnitude B). Combining multiple forces to form a single resultant
C). Splitting a force into components without changing its effect D). Reducing the magnitude of a force in a given direction

Correct Answer: C

Q.30 Atmospheric pressure is:

Ans A). the pressure exerted by the Earth's atmosphere at any given point B). the pressure difference between two fluids
C). the pressure inside a fluid container D). the pressure of a vacuum

Correct Answer: A

Q.31 Shielded Metal Arc Welding (SMAW) is also called _____.

Ans A). Gas Tungsten Arc Welding B). Tungsten Inert Gas Welding C). Metal Inert Gas Welding D). Manual Metal Arc Welding

Correct Answer: D

Q.32 The main objective of the sequencing problem in production is to:

Ans A). ignore the order of job processing B). maximise the number of jobs processed C). increase the processing time of jobs
D). minimise the idle time of machines

Correct Answer: D

Q.33 A simply supported beam with a span length of 4 m carries a uniform load of intensity 5 N/m throughout its length. What will the value of the maximum bending moment (in N-m) in the beam be?

Ans A). 10 B). 0 C). 20 D). 4

Correct Answer: A

Q.34 What does the process of Principle of Arc welding involve?

Ans A). Creating flow of electric current in the air gap between the electrode and the workpiece to melt the metal
B). Supplying oxygen and acetylene between the electrodes to melt the metal
C). Creating a chemical reaction between the electrode and the workpiece to melt the metal
D). Creating friction between the electrode and the workpiece to melt the metal

Correct Answer: A

Q.35 For machining yellow metals and free-cutting steels, _____ is/are used as cutting fluids.

Ans A). water soluble oils B). germicides and water C). water D). insoluble oils

Correct Answer: A

Q.36 Which of the following is NOT an angular measurement device?

Ans A). Spirit Level B). Autocollimator C). Digital Micrometer D). Sine Bar

Correct Answer: C

Q.37 What distinguishes a semi-open impeller from an open impeller?

Ans A). A semi-open impeller lacks any vanes. B). A semi-open impeller has vanes on both sides.
C). A semi-open impeller has a partial shroud on one side. D). A semi-open impeller is completely enclosed by a casing.

Correct Answer: C

Q.38 Relative efficiency of an engine is defined as the ratio of:

Ans A). mechanical efficiency to volumetric efficiency B). actual thermal efficiency to air-standard efficiency
C). brake thermal efficiency to indicated thermal efficiency D). actual thermal efficiency to Carnot efficiency

Correct Answer: B

Q.39 Identify the milling cutter used for parting off operations or cutting thin slots.

Ans A). Angle milling cutter B). Plain milling cutter C). Fly milling cutter D). Metal slitting cutter

Correct Answer: D

Q.40 What defines a black body in the context of thermal radiation?

Ans A). An idealised object that absorbs all incident radiation and emits the maximum possible radiation at a given temperature
B). An object with perfect thermal insulation C). A surface that reflects all incident radiation without absorption
D). A material that only emits visible light

Correct Answer: A

Q.41 How is thermal efficiency defined in the context of internal combustion engines?

- Ans A). The ratio of indicated power to frictional power losses B). The ratio of the engine displacement to the fuel mass used
C). The ratio of exhaust gas temperature to the intake air temperature
D). The ratio of useful work output to the total chemical energy input from fuel

Correct Answer: D

Q.42 In drilling operations, a coolant is used to _____.

- Ans A). clean the drill bit B). cool down the drill bit C). reduce durability of drill bit D). heat the drill bit

Correct Answer: B

Q.43 A built-up section is made by joining two equal I-sections at the flanges at their outer faces so that the composite consists of one I-section above the other. The moment of inertia of each section through a centroidal axis parallel to the web is I_{yy} .

The moment of inertia of the composite built-up section about a similar axis is:

- Ans A). $\frac{I_{yy}}{2}$ B). $2I_{yy}$ C). $4I_{yy}$ D). I_{yy}

Correct Answer: B

Q.44 _____ is/are the most widely used material for the broaches in a broaching operation.

- Ans A). Silver-copper combination B). Copper C). Metal matrix composites D). High speed steel

Correct Answer: D

Q.45 Why does cast iron have high compressive strength but low tensile strength?

- Ans A). Due to its elastic properties B). Due to its high malleability C). Due to its ductile nature D). Due to the presence of graphite flakes

Correct Answer: D

Q.46 Why is the concept of transmissibility of forces valid for a rigid body?

- Ans A). Because a rigid body does not deform under applied forces
B). Because a rigid body always has an infinite number of forces acting on it C). Because forces always act in the direction of motion
D). Because internal forces in a rigid body do not exist

Correct Answer: A

Q.47 Brazing is a process of _____ metals without melting the base metal.

- Ans A). cutting B). melting C). drilling D). joining

Correct Answer: D

Q.48 Specific volume of a fluid is the reciprocal of its _____.

- Ans A). surface tension B). viscosity C). mass density D). dynamic viscosity

Correct Answer: C

Q.49 In torch brazing, heat is produced by burning a mixture of _____.

- Ans A). oxy-acetylene gas B). oxy-neon gas C). oxy-nitrogen gas D). oxy-hydrogen gas

Correct Answer: A

Q.50 While measuring surface texture, the part of the profilometer that makes contact with the workpiece surface is _____.

- Ans A). a motorised mechanism B). a finely pointed stylus C). an electrical pickup D). a recording unit

Correct Answer: B

Q.51 Soldering is a _____ similar or dissimilar metals by heating them to a required temperature.

- Ans A). method of cooling B). method of joining C). method of boring D). method of cutting

Correct Answer: B

Q.52 Inventory control begins with _____ analysis, a fundamental supply chain activity frequently performed by inventory controllers and materials managers.

- Ans A). XYZ B). VED C). ABC D). FSN

Correct Answer: C

Q.53 In a battery or coil ignition system, what is the role of the ignition coil?

- Ans A). To compress the air entering the combustion chamber B). To regulate the fuel injection timing
C). To control the engine's exhaust temperature D). To transform the low battery voltage into a high voltage required for spark generation

Correct Answer: D

Q.54 In a 'spirit-level device', to which point of the glass vial does the bubble always move?

- Ans A). Random point B). Highest point C). Middle point D). Lowest point

Correct Answer: B

Q.55 A bench mounted drilling machine is of the same type as a _____.

Ans A). sensitive drilling machine B). deep hole drilling machine C). radial drilling machine D). gang drilling machine

Correct Answer: A

Q.56 Impact strength is usually measured in units of:

Ans A). Joules B). Newtons C). Watts D). Pascals

Correct Answer: A

Q.57 Which of the following expressions can determine the longitudinal feed rate in "Through Feed Centreless Grinding"?

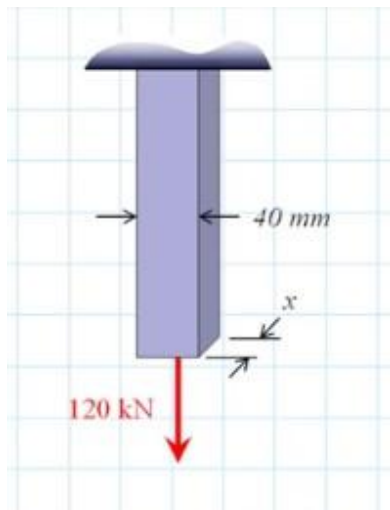
(If the diameter of the regulating wheel = D , r.p.m. of the regulating wheel = N , angle of inclination of the regulating wheel = θ)

Ans A). Longitudinal feed rate = $\pi \times D \times N \times \sin(\theta)$ B). Longitudinal feed rate = $[\pi \times D \times N] / \sin(\theta)$

C). Longitudinal feed rate = $\pi \times D \times N \times \cos(\theta)$ D). Longitudinal feed rate = $[\pi \times D \times N] / \cos(\theta)$

Correct Answer: A

Q.58 Determine the minimum thickness of the rectangular axial bar shown against yielding. Given Factor of Safety (FOS) = 2 and Yield stress = 310 MPa.



Ans A). 155 mm B). 19.4 mm C). 60 mm D). 25 mm

Correct Answer: B

Q.59 What should be the included angle of the cutting tool used for machining metric threads in a thread-cutting operation?

Ans A). 45 degrees B). 60 degrees C). 75 degrees D). 55 degrees

Correct Answer: B

Q.60 Which of the following wheels supports the workpiece in internal centreless grinding operation?

Ans A). Pressure roller, supporting roller and regulating wheel B). Only pressure roller C). Only supporting roller D). Only regulating wheel

Correct Answer: A

Q.61 Among the following, which beam can be classified as a statically indeterminate beam?

Ans A). Fixed beam B). Simply supported beam C). Overhanging beam D). Cantilever beam

Correct Answer: A

Q.62 What is the function of a shank in a broaching machine?

Ans A). Removes chips and coolant from the cutting area B). Breaks up the chips generated during the broaching process
C). Holds the broach in place and gives it a rotary motion D). Guides the broach through the material and maintains tool alignment

Correct Answer: D

Q.63 One design advantage of a single volute casing is that:

Ans A). it allows for multiple impeller stages B). it provides balanced radial forces
C). it minimises hydraulic losses by equalising pressure distribution D). it simplifies the manufacturing process

Correct Answer: D

Q.64 What does the Polygon Law of Forces describe?

Ans A). The equilibrium condition of multiple forces B). The method to find the resultant of multiple forces
C). The interaction between two perpendicular forces D). The force required to balance a single force

Correct Answer: B

Q.65 The structured list of components and sub-assemblies needed to manufacture a final product is represented by the:

- Ans A). lead time B). master file C). bill of materials D). components directory

Correct Answer: C

Q.66 The overall efficiency of a pump is calculated by comparing:

- Ans A). the hydraulic power output to the mechanical power input B). the volumetric flow rate to the pump casing size
C). the manometric head to the fluid velocity D). the pump speed to the impeller diameter

Correct Answer: A

Q.67 If two forces act at a right angle (90°), what will be the magnitude of their resultant force?

- Ans A). $R = \sqrt{F_1^2 + F_2^2}$ B). $R = F_1 - F_2$ C). $R = 2F_1 F_2 \cos \theta$ D). $R = F_1 + F_2$

Correct Answer: A

Q.68 Two shafts, A and B, are of the same material. If the diameter of A is thrice the diameter of B, then the torque that can be transmitted by A will be:

- Ans A). 9 times that of B B). 27 times that of B C). 16 times that of B D). 64 times that of B

Correct Answer: B

Q.69 The power required to drive a pump is calculated by considering:

- Ans A). only the mechanical friction in the pump B). the pump's weight
C). the work done in overcoming hydraulic losses and delivering the desired head D). only the hydraulic power output

Correct Answer: C

Q.70 Which of the following is an example of forced convection?

- Ans A). Heat transfer through a stationary fluid layer B). Thermal energy transmitted by electromagnetic waves
C). Warm air naturally rising from a hot surface D). Air blown over a car radiator by a fan

Correct Answer: D

Q.71 Which of the following is a key advantage of CNC lathes in turning operations?

- Ans A). They provide higher automation and complex machining cycles. B). They are limited to simple machining operations.
C). They are less accurate than conventional chucking machines. D). They rely mainly on mechanical devices for control.

Correct Answer: A

Q.72 Which area under the stress-strain curve represents the toughness of a material?

- Ans A). Total area under the curve B). Area of plastic region C). Area of elastic region D). Slope of the elastic region

Correct Answer: A

Q.73 In Submerged Arc Welding, _____ electrode is used in combination with a flux feeder tube.

- Ans A). non-consumable baked carbon B). non-consumable tungsten C). non-consumable graphite D). consumable bare

Correct Answer: D

Q.74 Which type of steel would be best suited for applications requiring both high strength and good corrosion resistance?

- Ans A). High-carbon steel B). Low-alloy steel C). Mild steel D). Stainless steel

Correct Answer: D

Q.75 What will be the value of the maximum absolute shear stress produced in a thin cylinder if hoop stress = 40 MPa and longitudinal stress = 20 MPa?

- Ans A). 10 MPa B). 60 MPa C). 30 MPa D). 20 MPa

Correct Answer: D

Q.76 What is a primary advantage of using an open impeller design?

- Ans A). Easier inspection and cleaning compared to closed impellers B). Improved efficiency due to reduced flow separation
C). Higher pressure generation compared to radial flow pumps D). Complete elimination of cavitation risks

Correct Answer: A

Q.77 The Vickers hardness number (VHN) for a material with a 20 kg load and an average indentation diagonal of 0.3 mm is:

- Ans A). 78 B). 324 C). 115 D). 412

Correct Answer: D

Q.78 Which of the following best describes the strength of mild steel compared to alloy steel?

- Ans A). Alloy steel generally has higher strength than mild steel. B). Mild steel generally has higher strength than alloy steel.
C). Both mild steel and alloy steel have the same strength. D). Mild steel is stronger in compression but weaker in tension than alloy steel.

Correct Answer: A

Q.79 What is the typical behaviour of creep deformation in materials at very high temperatures (above 0.5 times the melting temperature)?

Ans A). Material exhibits significant plastic deformation B). Rapid deformation and fractures C). Material becomes more brittle and fails instantly D). Deformation in material is negligible

Correct Answer: A

Q.80 Which of the following is the correct sequence for the IS specification of any Grinding wheel?

Ans A). Abrasive used - Structure - Grade - Grit number - Bond Type B). Abrasive used - Grit number - Structure - Grade - Bond Type
C). Abrasive used - Grit number - Grade - Structure - Bond Type D). Abrasive used - Grade - Structure - Grit number - Bond Type

Correct Answer: C

Q.81 In a four-stroke cycle diesel engine, the intake valve starts to open at ____.

Ans A). 25° - 40° after BDC B). 10° - 25° before TDC C). 25° - 40° before BDC D). 10° - 15° after TDC

Correct Answer: C

Q.82 In a profile projector, the magnified image of the workpiece is created by:

Ans A). mirrors B). a Vernier micrometer C). projection lens D). condenser lens

Correct Answer: C

Q.83 A cantilever beam with a span length of L m carries a uniform moment of intensity 'M' N-m/m. Which of the following statements is correct?

Ans A). Shear force throughout the length will be M/L. B). Shear force throughout the length will be ML.
C). Shear force throughout the length will be zero. D). Shear force throughout the length will be ML/2.

Correct Answer: C

Q.84 The key step in making a dimensional measurement using a tool maker's microscope is ____.

Ans A). adjusting the focus on the workpiece B). changing the objective lens power C). aligning the cross-wires with the measurement points
D). viewing the magnified image

Correct Answer: A

Q.85 For a closed system undergoing a thermodynamic cycle, the first law states which of the following?

Ans A). Net work done equals net heat transfer. B). Entropy always increases. C). Pressure and temperature are inversely related.
D). Internal energy remains constant.

Correct Answer: A

Q.86 It is important for the piston to fit 'snugly' into the cylinder to:

Ans A). neither allow for easy movement nor provide a gas-tight space B). provide a gas-tight space alone
C). both, allow for easy movement and provide a gas-tight space D). allow for easy movement alone

Correct Answer: C

Q.87 What is the primary function of the headstock in a lathe machine?

Ans A). To provide support for cutting tools during operation B). To adjust the feed mechanism for thread-cutting
C). To control the movement of the carriage and tailstock D). To hold and rotate the workpiece at different speeds

Correct Answer: D

Q.88 Which of the following is the correct rule when selecting a Grinding Wheel?

Ans A). Close structure for ductile and soft material B). Soft wheel for hard metal and hard wheel for soft metal
C). Hard wheel for hard metal and soft wheel for soft metal D). Fine finish needs open structure

Correct Answer: B

Q.89 Which of the following does NOT belong to assumptions in calculating EOQ in the basic inventory model?

Ans A). Material cannot be supplied in variable quantities B). Demand is continuous C). Delivery of all items are instantaneous
D). Lead time is constant

Correct Answer: A

Q.90 Which of the following is the primary element that supports the workpiece in centreless grinding?

Ans A). Work rest blade B). Stationary table C). Work test blade D). Pressure roller blade

Correct Answer: A

Q.91 Which of the following does a cascade refrigeration system use?

Ans A). Two or more refrigerants with different boiling points B). A single refrigerant in both cycles C). Only ammonia as a refrigerant
D). Only air as a working fluid

Correct Answer: A

Ans A). r B). $2r$ C). $r/2$ D). r/t **Correct Answer: A**

Ans A). reducing the pressure of acetylene and oxygen gas from the cylinders to working pressure B). igniting the welding torch
C). increasing the oxygen and acetylene mixture pressure D). mixing oxygen and acetylene thoroughly

Correct Answer: A

Ans A). Atomic Hydrogen Welding B). Tungsten Inert Gas Welding C). Stud Arc Welding D). Electroslag Welding **Correct Answer: A**

Ans A). 75% B). 85% C). 90% D). 80%

Correct Answer: C

Ans A). inverse square of the distance B). cube of the distance C). fourth power of the distance D). square of the distance **Correct Answer: A**

Ans A). Quenching in water B). Slow cooling inside a furnace C). Cooling in an oil bath D). Air cooling **Correct Answer: B**

Ans A). located on the XY stage B). located on the surface of the workpiece C). located on the objective lens
D). etched on glass within the eyepiece

Correct Answer: D

Ans A). the shoe B). the stylus C). rollers D). springs **Correct Answer: B**

Ans A). Exception reports B). Performance control reports C). Planning reports D). Planned order schedule **Correct Answer: D**



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Mechanical and Allied Engineering

*** Note**

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 Why do covalent compounds generally have low melting and boiling points?

Ans A). They have weak intermolecular forces. B). They have strong electrostatic forces. C). They contain metallic bonds.
D). They have a rigid lattice structure.

Correct Answer: A

Q.2 Which of the following was NOT an artisan guild during the Mauryan period?

Ans A). Bankers and Merchants B). Carpenters C). Astrologers D). Potters

Correct Answer: C

Q.3 Which operating system is known for its open-source nature and community-driven development for desktops and laptops?

Ans A). iOS B). Linux C). macOS D). Windows

Correct Answer: B

Q.4 An alloy is considered a homogeneous mixture because:

Ans A). it exhibits uniform composition throughout B). it contains two or more phases
C). its components are chemically combined in fixed proportions D). its components can be separated by filtration

Correct Answer: A

Q.5 An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.

Ans A). 17.5 cm B). -37.5 cm C). -10.0 cm D). -9.37 cm

Correct Answer: B

Q.6 Which of the following options is NOT a greenhouse gas?

Ans A). Nitrous oxide B). Carbon dioxide C). Carbon tetrachloride D). Methane

Correct Answer: C

Q.7 Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?

Ans A). Ivor Jennings B). BR Ambedkar C). LM Singhvi D). HM Seervai

Correct Answer: C

Q.8 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?

Ans A). Global Positioning System (GPS) B). Navigation with Indian Constellation (NavIC) C). Galileo
D). Global Navigation Satellite System (GLONASS)

Correct Answer: B

Q.9 Electricity production is categorised under which of the following economic sectors?				
Ans A). Secondary sector	B). Tertiary sector	C). Quaternary sector	D). Primary sector	Correct Answer: A
Q.10 Due to global warming, the temperature of the earth has increased by _____				
Ans A). 0.6°C	B). 0.8°C	C). 0.5°C	D). 0.7°C	Correct Answer: A
Q.11 The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?				
Ans A). Article 72	B). Article 123	C). Article 356	D). Article 110	Correct Answer: B
Q.12 In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?				
Ans A). 600 metres T20	B). 400 metres T20	C). 200 metres T20	D). 100 metres T20	Correct Answer: B
Q.13 In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.				
Ans A). DDT	B). chlorine	C). phosphates	D). organochlorine	Correct Answer: A
Q.14 Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.				
Ans A). emotional defects	B). diseases	C). mutations	D). syndromes	Correct Answer: C
Q.15 Which type of RAM is faster and DOES NOT require refreshing?				
Ans A). DRAM	B). ROM	C). Flash Memory	D). SRAM	Correct Answer: D
Q.16 Which function key is used to move text or graphics in a document?				
Ans A). F5	B). F2	C). F12	D). F1	Correct Answer: B
Q.17 Where can one find the option to change a PowerPoint template?				
Ans A). Design → Themes	B). Insert → Themes	C). Home → Layout	D). View → Slide Master	Correct Answer: A
Q.18 The kinetic energy of an object is derived using which of the following equations of motion?				
Ans A). $s = ut + \frac{1}{2}at^2$	B). $v^2 - u^2 = 2as$	C). $a = (v - u) / t$	D). $v = u + at$	Correct Answer: B
Q.19 The people of _____ were famously involved in execution of the Chipko movement.				
Ans A). Garhwal Himalayas	B). Gujarat	C). Delhi	D). Assam	Correct Answer: A
Q.20 Which of the following will increase the heat produced by a heating element?				
Ans A). Increasing the current flowing through the wire	B). Using a wire of lower resistance	C). Using a material with high conductivity	D). Decreasing the applied voltage	Correct Answer: A
Q.21 The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.				
Ans A). UV-A	B). UV-C	C). UV-B	D). UV-D	Correct Answer: C
Q.22 Which of the following elements has an atomic number of 8?				
Ans A). Nitrogen	B). Oxygen	C). Carbon	D). Hydrogen	Correct Answer: B
Q.23 Which of the following bridges is constructed over the Brahmaputra River in India?				
Ans A). Mahatma Gandhi Setu	B). Pamban Bridge	C). Dhola-Sadiya Bridge	D). Howrah Bridge	Correct Answer: C
Q.24 The President has the power to dissolve which house of Parliament?				
Ans A). Lok Sabha only	B). Both Rajya Sabha and Lok Sabha	C). Legislative Assembly	D). Rajya Sabha only	Correct Answer: A

Q.25	Who among the following established the Bengal Chemical Swadeshi Stores?			
Ans A).	Acharya PC Ray	B).	BG Tilak	Correct Answer: A
	C).	Dadabhai Naoroji	D).	Surendranath Banerjee
Q.26	A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?			
Ans A).	25%	B).	16.67%	Correct Answer: B
	C).	45%	D).	20%
Q.27	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?			
Ans A).	United States	B).	France	Correct Answer: C
	C).	Sweden	D).	Canada
Q.28	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?			
Ans A).	3.750 J	B).	5.625 J	Correct Answer: B
	C).	1.875 J	D).	7.500 J
Q.29	What is the primary function of a computer firewall?			
Ans A).	To store user passwords securely	B).	To speed up internet connectivity	Correct Answer: C
	C).	To prevent unauthorised access to a private network	D).	To detect and remove computer viruses
Q.30	A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.			
Ans A).	uniform motion	B).	random motion	Correct Answer: A
	C).	non-uniform motion	D).	rotational motion
Q.31	The main reason for which we are dependent on air is our _____.			
Ans A).	excretion	B).	respiration	Correct Answer: B
	C).	digestion	D).	osmoregulation
Q.32	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?			
Ans A).	NUMBERTOTEXT()	B).	TEXT()	Correct Answer: B
	C).	VALUE()	D).	FORMAT()
Q.33	What does LAN stand for?			
Ans A).	Local Area Network	B).	Limited Access Node	Correct Answer: A
	C).	Large Area Network	D).	Linked Access Network
Q.34	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.			
Ans A).	1984	B).	1986	Correct Answer: B
	C).	1972	D).	1992
Q.35	Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?			
Ans A).	Schneider Kreuznach	B).	Leica	Correct Answer: C
	C).	Carl Zeiss AG	D).	Jenoptik
Q.36	A concave lens has a focal length of -2 cm. What is its power?			
Ans A).	-0.5 D	B).	25 D	Correct Answer: C
	C).	-50 D	D).	0.5 D
Q.37	Who among the following developed the notation system for Hindustani classical music?			
Ans A).	Pandit Ravi Shankar	B).	Ustad Amjad Ali Khan	Correct Answer: D
	C).	Ustad Bismillah Khan	D).	Pandit Vishnu Narayan Bhatkhande
Q.38	What is the primary function of a firewall tool in a computer network?			
Ans A).	To store data securely	B).	To detect and remove viruses	Correct Answer: C
	C).	To monitor and control incoming and outgoing network traffic	D).	To speed up internet connections
Q.39	Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?			
Ans A).	Mithali Raj	B).	Smriti Mandhana	Correct Answer: B
	C).	Jhulan Goswami	D).	Harmanpreet Kaur

Q.40 A metal wire is stretched, but it does not break easily. This property is known as:				
Ans A). brittleness	B). ductility	C). malleability	D). hardness	Correct Answer: B
Q.41 What is the general orientation of the Himalayan ranges in the northwestern part of India?				
Ans A). South-North	B). East-South	C). Northwest to Southeast	D). Northeast to Southwest	Correct Answer: C
Q.42 The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?				
Ans A). 128 u	B). 32 u	C). 64 u	D). 256 u	Correct Answer: D
Q.43 Which of the following is NOT a source of collection of municipal solid waste?				
Ans A). Radioactive waste	B). Waste from schools	C). Waste from hospitals	D). Waste from homes	Correct Answer: A
Q.44 Who is known as the leader of the Green Revolution in India?				
Ans A). Tribhuvandas Kishibhai Patel	B). C Subramaniam	C). Dr. Rajendra Prasad	D). Prof. MS Swaminathan	Correct Answer: D
Q.45 Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?				
Ans A). =MULTIPLY(A2,B2)	B). =A2*B2	C). =A2+B2	D). =A2-B2	Correct Answer: B
Q.46 What happens to the pH of pure water when a few drops of lemon juice are added?				
Ans A). The pH becomes neutral	B). The pH decreases	C). The pH remains the same	D). The pH increases	Correct Answer: B
Q.47 A sound wave with a low frequency will have _____.				
Ans A). a low pitch	B). a low amplitude	C). a short wavelength	D). a high pitch	Correct Answer: A
Q.48 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Herbicides	B). Fungicides	C). Organic fertilisers	D). Pesticides	Correct Answer: C
Q.49 Which of the following correctly differentiates mixtures and compounds?				
Feature	Mixture	Compound		
A) Separation	Can be separated by physical methods	Requires chemical me		
B) Composition	Fixed ratio	Variable ratio		
C) Properties	Always the same as constituents	Different from constit		
D) Formation	By chemical reaction	By simple mixing		
Ans A). Option B (Composition) is correct	B). Option D (Formation) is correct	C). Option A (Separation) is correct		
D). Option C (Properties) is correct				Correct Answer: C
Q.50 What happens when you click on the 'Forward' button in an email?				
Ans A). The email is permanently deleted.	B). A blank email opens.	C). The email is automatically sent to all contacts.		
D). The original message is copied into a new email draft.				Correct Answer: D

Q.1 Which of the following materials is likely to have the highest thermal conductivity?				
Ans A). Rubber	B). Air	C). Aluminium	D). Wood	Correct Answer: C
Q.2 Which characteristic best describes an axial flow pump?				
Ans A). The fluid flows parallel to the pump shaft.	B). The fluid flows radially outward from the shaft.			
C). The fluid flows perpendicular to the pump shaft.	D). The fluid flow is converted to heat energy.			
				Correct Answer: A

Q.3 Which of the following are used to improve pigment dispersion and the stability of coatings during organic coating?

Ans A). Colloidal stabilisers

B). Pigment analyser

C). Curing stabilisers

D). Plasticisers

Correct Answer: A

Q.4 What is the primary function of the tool post in a lathe machine?

Ans A). To secure the workpiece firmly on the machine bed

B). To control the feed rate and depth of cut during machining

C). To hold and adjust the tool for a suitable working position

D). To support the compound rest and provide rotational movement

Correct Answer: C

Q.5 The S-N curve in fatigue testing shows the relationship between:

Ans A). the number of cycles and strain amplitude

B). the number of cycles and stress amplitude

C). stress and strain

D). stress and displacement

Correct Answer: B

Q.6 Slag inclusion is the welding defect caused by _____.

Ans A). gas being trapped, due to moisture

B). insufficient cleaning and preparation of the base metal before welding commences

C). contamination of either the filler or parent metals

D). incorrect edge penetration

Correct Answer: B

Q.7 Tungsten Inert Gas Welding (TIG) is also called _____.

Ans A). Metal Inert Gas Welding

B). Gas Tungsten Arc Welding

C). Gas Metal Arc Welding

D). Thermo-compression Welding

Correct Answer: B

Q.8 Which of the following centre-less grinding can be preferred for headed, stepped, or taper-shaped workpieces?

Ans A). Plunge cut grinding

B). Taper out grinding

C). Rotation feed center-less grinding

D). Out feed grinding

Correct Answer: A

Q.9 Which statement best compares battery and magneto ignition systems in internal combustion engines?

Ans A). Magneto systems require more frequent maintenance than battery systems.

B). Battery ignition systems are independent of engine speed, unlike magneto systems.

C). Battery ignition systems rely on stored electrical energy, whereas magneto systems generate power on-demand via electromagnetic induction.

D). Both systems depend on an external battery for operation.

Correct Answer: C

Q.10 In brazing, the filler metal is drawn into the joint by means of _____.

Ans A). friction

B). damping action

C). capillary action

D). surface tension

Correct Answer: C

Q.11 In Arc Welding Processes, GMAW stands for _____.

Ans A). Gas Metal Arc Welding

B). Gas Molten Arbour Welding

C). Gas Molten Arc Welding

D). Gang Metal Arc Welding

Correct Answer: A

Q.12 Which type of light is generally used in the photo etching process?

Ans A). Infrared (IR) light

B). X-ray

C). Visible light

D). Ultraviolet (UV) light

Correct Answer: D

Q.13 How is the resultant force calculated if two forces act along the same straight line but in opposite directions?

Ans A). $R = F_1 + F_2$

B). $R = \sqrt{F_1^2 + F_2^2}$

C). $R = 2F_1F_2 \cos\theta$

D). $R = F_1 - F_2$

Correct Answer: D

Q.14 The radius of gyration about the polar axis of a circular lamina of radius 0.2 m is:

Ans A). 4.1 cm

B). 0.14 m

C). 0.1 m

D). π cm

Correct Answer: B

Q.15 The intake valve closes at _____ for a low-speed engine and at _____ for high-speed four-stroke petrol engines.

Ans A). 60 deg after BDC; 10 deg after BDC

B). 10 deg before BDC; 60 deg before BDC

C). 60 deg before BDC; 10 deg before BDC

D). 10 deg after BDC; 60 deg after BDC

Correct Answer: D

Q.16	If the external diameter of a hollow shaft is three times greater than its internal diameter, what is the ratio of its torque-carrying capacity compared to that of a solid shaft of identical material and the same outer diameter?		
Ans A).	65/81	B). 80/81	C). 26/27
			D). 81/80
Correct Answer: B			
Q.17	In which type of engine is a mist lubricating system most commonly used?		
Ans A).	Gas turbine engines	B). Rotary engines	C). Four-stroke diesel engines
			D). Two-stroke petrol engines
Correct Answer: D			
Q.18	Which of the following is a common metrological application of interferometry?		
Ans A).	Determining surface hardness	B). Analysing chemical composition	C). Measuring temperature
	D). Inspecting machine parts for straightness		
Correct Answer: D			
Q.19	What does specific fuel consumption (SFC) measure in an internal combustion engine?		
Ans A).	The efficiency of the engine's exhaust system	B). The total mass of the fuel used during engine operation	
	C). The fuel efficiency expressed as the amount of fuel consumed per unit of power produced		
	D). The ratio of air intake to fuel delivered per combustion cycle		
Correct Answer: C			
Q.20	The Zeroth Law of Thermodynamics establishes the basis for which of the following?		
Ans A).	Entropy increase in isolated systems	B). Heat transfer through conduction	C). Conservation of energy
	D). Measurement of temperature		
Correct Answer: D			
Q.21	A pump discharges water with a manometric head of 20 m. If the density of water is 1000 kg/m ³ and gravity is 9.81 m/s ² , what is the approximate pressure increase provided by the pump?		
Ans A).	20 kPa	B). 2 kPa	C). 196 kPa
			D). 9.81 kPa
Correct Answer: C			
Q.22	Broaching of outside surfaces is called ____.		
Ans A).	internal broaching	B). hallow broaching	C). surface broaching
			D). hole broaching
Correct Answer: C			
Q.23	How many mirrors are used for magnification in the Zeiss Ultra-Optimeter?		
Ans A).	One	B). Two	C). Three
			D). Four
Correct Answer: B			
Q.24	In most of the SI engines, the intake valve opens a few degrees before the TDC on the exhaust stroke to:		
Ans A).	allow for better scavenging of exhaust gases	B). ensure that the intake valve is fully open when the piston reaches the TDC	
	C). ensure complete combustion of the fuel-air mixture	D). increase the engine's compression ratio	
Correct Answer: A			
Q.25	Which of the following is NOT a function of the spirit level measuring instrument?		
Ans A).	For measuring surface roughness	B). For determining flatness and straightness	C). For measuring angles
	D). For measuring alignment of machine parts		
Correct Answer: A			
Q.26	Electroplating is the opposite of which of the following?		
Ans A).	Electrolysis	B). Battery charging	C). Galvanic cell
			D). Fuel cell
Correct Answer: C			
Q.27	The primary purpose of job rating or evaluation is to:		
Ans A).	provide benefits like leave and housing	B). assess an employee's performance	C). motivate employees for higher production
	D). determine the relative worth of different jobs		
Correct Answer: D			
Q.28	What is the primary function of the tailstock in a lathe?		
Ans A).	To change the direction of the spindle movement	B). To provide support and bearing for the rotating job	
	C). To hold the cutting tool for machining operations	D). To control the speed of the spindle rotation	
Correct Answer: B			
Q.29	A pitot tube is primarily used to measure:		
Ans A).	dynamic pressure	B). static pressure	C). atmospheric pressure
			D). flow velocity
Correct Answer: D			

Q.30	In rack and pinion gear, the rack is a _____ and the pinion is a _____.			
Ans	A). straight line gear; straight line gear D). circular wheel; circular wheel	B). straight line gear; circular wheel	C). circular wheel; straight line gear	Correct Answer: B
Q.31	Which of the following is a special case of a spirit-level device?			
Ans	A). Micrometer	B). Clinometer	C). Autocollimator D). Kelvinometer	Correct Answer: B
Q.32	Angle gauges are generally made from which material?			
Ans	A). Carbon fibre	B). Hardened steel	C). Wood D). Plastic	Correct Answer: B
Q.33	In which type of oxy-acetylene welding flames are both acetylene and oxygen in equal proportions?			
Ans	A). Neutral welding flame	B). Oxidising welding flame	C). Reducing welding flame D). Carburising welding flame	Correct Answer: A
Q.34	Which of the following types of steel would NOT typically undergo the normalising process?			
Ans	A). High-carbon steel	B). Alloy steel	C). Medium-carbon steel D). Stainless steel	Correct Answer: D
Q.35	Which of the following beams is classified as a statically determinate beam?			
Ans	A). Propped cantilever beam	B). Continuous beam	C). Overhanging beam D). Fixed beam	Correct Answer: C
Q.36	A gray body is defined as a body that:			
Ans	A). absorbs all radiation incident upon its surface C). has emissivity less than 1 but constant for all wavelengths	B). reflects all radiation incident upon its surface D). has an emissivity that varies with wavelength of radiation		Correct Answer: C
Q.37	Fluid pressure is defined as:			
Ans	A). the force per unit area exerted by a fluid at rest D). the rate of the flow of fluid through a given area	B). the force acting parallel to a surface	C). the weight of a fluid per unit volume	Correct Answer: A
Q.38	What is the function of coolants in metal cutting or machining operation?			
Ans	A). Decreases adhesion between chip and tool C). Increases wear and tear of tools and decrease tool life	B). Provides higher friction and wear between tool and workpiece D). Reduces machinability and machining forces		Correct Answer: A
Q.39	If elastic strength increases 3 times, then Proof Resilience:			
Ans	A). increases 3 times	B). decreases 9 times	C). decreases 3 times D). increases 9 times	Correct Answer: D
Q.40	In a two-stroke petrol engine, the primary function of the crankcase is to:			
Ans	A). house the transfer port	B). store lubricating oil	C). cool the engine D). act as a primary pumping chamber for the air-fuel mixture	Correct Answer: D
Q.41	If a component has a Factor of Safety (FoS) of 1.0, what does it indicate?			
Ans	A). The design is highly conservative. C). The design is unsafe and should not be designed.	B). The component will never fail irrespective of any load. D). The material will fail exactly at the expected load.		Correct Answer: D
Q.42	What will be the shape of the bending moment diagram for a cantilever beam carrying a uniformly distributed load throughout its length?			
Ans	A). Cubical	B). A straight line	C). A parabola D). A hyperbola	Correct Answer: C
Q.43	The primary reason for diesel engines having more efficiency than gasoline engines is they _____.			
Ans	A). have a longer stroke	B). have a higher compression ratio	C). use a different fuel D). operate at higher temperatures	Correct Answer: B

Q.44 Which type of fracture is most likely to occur in a material with high tensile strength but low ductility?

Ans A). Fatigue failure

B). Ductile fracture

C). Creep failure

D). Brittle fracture

Correct Answer: D

Q.45 In the _____ welding technique, the welding rod is applied before the welding torch in the direction of motion.

Ans A). forehand

B). backhand

C). laser

D). electric arc

Correct Answer: A

Q.46 In climb milling, metal is removed by the cutter rotating in the _____.

Ans A). opposite direction of the feed of the workpiece

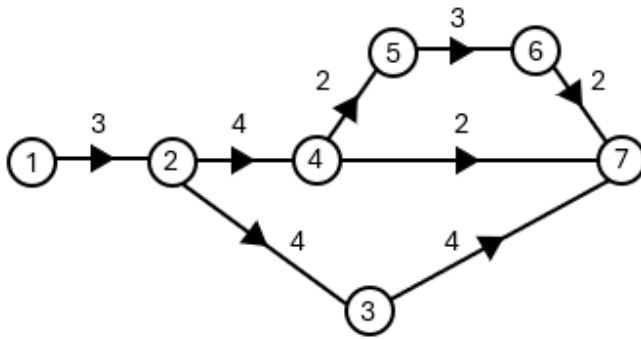
B). perpendicular direction of the feed of the workpiece

C). same direction of the feed of the workpiece

D). diagonal direction of the feed of the workpiece

Correct Answer: C

Q.47 Identify the critical path from the given diagram.



Ans A). 1-2-3-7

B). 1-2-4-5-6-7

C). 1-2-4-5-6

D). 1-2-4-7

Correct Answer: B

Q.48 Which of the following elements provides the necessary horizontal force to the workpiece in centerless grinding?

Ans A). Regulating wheel

B). Stationary wheel

C). Work test blade

D). Revolving wheel

Correct Answer: A

Q.49 In the CPM technique, the critical path slack is:

Ans A). zero

B). negative

C). either negative or zero

D). positive

Correct Answer: A

Q.50 If the temperature of a black body doubles, how many times will its emissive power increase?

Ans A). 8 times

B). 4 times

C). 16 times

D). 2 times

Correct Answer: C

Q.51 Frictional power in an engine is calculated as:

Ans A). Indicated power – Brake power

B). Brake power / Mechanical efficiency

C). Indicated power + Brake power

D). Indicated power × Mechanical efficiency

Correct Answer: A

Q.52 In carburising welding flame, there is a supply of _____ in the combustible mixture.

Ans A). limited acetylene proportion and more oxygen proportion

B). acetylene and oxygen in equal proportion

C). more acetylene proportion and limited oxygen proportion

D). only oxygen

Correct Answer: C

Q.53 _____ type of electrode is used in Gas Tungsten Arc Welding (GTAW).

Ans A). Non-consumable tungsten

B). Consumable bare

C). Consumable coated

D). Non-consumable carbon

Correct Answer: A

Q.54 Which alloying element in alloy steel is primarily responsible for enhancing corrosion resistance?

Ans A). Chromium

B). Manganese

C). Silicon

D). Carbon

Correct Answer: A

Q.55 The type of lasers commonly used in laser interferometers for metrology applications are _____.

Ans A). solid-state lasers

B). dye lasers

C). gas lasers

D). excimer lasers

Correct Answer: C

Q.56 In Carbon Arc Welding, DCSP stands for _____.

Ans A). Direct current straight porosity B). Direct current straight pressure C). Direct current straight polarity D). Dual current straight polarity

Correct Answer: C

Q.57 In Arc Welding process, chipping hammer is used to _____.

Ans A). clean the surface to be welded B). remove the slag by striking C). protect the eyes
D). hold the electrode manually and conducting current to it

Correct Answer: B

Q.58 How does atmospheric pressure influence gauge pressure measurements?

Ans A). Gauge pressure is independent of atmospheric pressure. B). Gauge pressure equals atmospheric pressure minus absolute pressure.
C). Gauge pressure is the difference between absolute pressure and atmospheric pressure.
D). Gauge pressure is the sum of absolute and atmospheric pressure.

Correct Answer: C

Q.59 What is the full form of 'CBN', which is used as an abrasive in grinding processes?

Ans A). Calcium bi nitrous B). Carbon boron nitrate C). Copper boron nitride D). Cubic boron nitride

Correct Answer: D

Q.60 Drill chuck is the major part of drilling machines, which _____.

Ans A). transmits rotary motion to the drill spindle at a number of speeds B). rests on the base and supports the head and the table
C). holds the drill bit D). holds electric motor, V-pulleys and V-belt

Correct Answer: C

Q.61 While measuring surface texture, the part of the profilometer that makes contact with the workpiece surface is:

Ans A). an electrical pickup B). a finely pointed stylus C). a motorised mechanism D). a recording unit

Correct Answer: B

Q.62 What is a characteristic of a coplanar parallel force system?

Ans A). Forces act in different planes and are parallel. B). Forces act in the same plane but are not parallel.
C). Forces act in different planes and are not parallel. D). Forces act in the same plane and are parallel.

Correct Answer: D

Q.63 Which of the following factors generally increases the brittleness of a material?

Ans A). High alloy content B). Low temperature C). High temperature D). High strain rate

Correct Answer: B

Q.64 A simply supported beam with a span length of 5 m carries a moment of 20 N-m (counterclockwise direction) at the middle of the beam. What will the value of reactions be at both the ends of the beam?

Ans A). 4 N, -4 N B). 8 N, -8 N C). 5 N, -5 N D). 2 N, -2 N

Correct Answer: A

Q.65 Why does stainless steel resist rusting, while regular carbon steel does not?

Ans A). Stainless steel has a thicker iron content. B). Stainless steel has a protective chromium oxide layer that prevents rusting.
C). Stainless steel has higher carbon content which makes it corrosion resistant. D). Stainless steel is coated with a special anti-rust chemical.

Correct Answer: B

Q.66 A beam with a symmetrical T section has a top flange 50 mm wide and 20 mm thick, and a web 40 mm high and 10 mm thick. An additional plate, 10 mm thick and 60 mm wide, is welded above the flange. The moment of inertia of this symmetrical planar cross-section about an axis in its plane normal to the web and in line with the upper face of the 10 mm thick plate works out to 1506,666.66 mm⁴. The centroidal axis of the combined area is 21.5 mm below this axis, normal to the web. The moment of inertia of this built-up area about the centroidal axis is (in mm⁴):

Ans A). 2,17,833.34 B). 70,077.52 C). 5,82,166.66 D). 1.33×10^5

Correct Answer: C

Q.67 In which of the following situations would brittleness be most UNDESIRABLE?

Ans A). In materials used in high-speed applications B). In tools that need to withstand heavy impact C). In structural beams under static load
D). In materials exposed to high temperatures

Correct Answer: B

Q.68 When two equal forces F act at an angle θ , the resultant force is given by which of the following expressions?

Ans A). $R = 2F \sin\left(\frac{\theta}{2}\right)$ B). $R = F_1 + F_2$ C). $R = F_1 - F_2$ D). $R = 2F \cos\left(\frac{\theta}{2}\right)$ Correct Answer: D

Q.69 A symmetrical I-section has a moment of inertia about the centroidal axis in its plane perpendicular to the web, of $22.34 \times 10^4 \text{ mm}^4$. The moment of inertia of the full rectangular area occupied by the I-beam cross section about this axis is $65 \times 10^4 \text{ mm}^4$. The two empty spaces on either side of the web are square. What is the height of the web?

Ans A). 50 mm B). 30 mm C). 55 mm D). 40 mm Correct Answer: D

Q.70 _____ is a welding defect caused by trapping of gas during the welding process.

Ans A). Undercut B). Burn through C). Cracking D). Porosity Correct Answer: D

Q.71 Which of the following is a benefit of using Material Requirements Planning (MRP)?

Ans A). Reduced customer service and satisfaction B). Increased raw material costs C). Better inventory planning and scheduling D). Slower response to market changes Correct Answer: C

Q.72 According to Maslow's Hierarchy of Needs, the basic requirements of the human body such as food, water, sleep, etc. are categorised into:

Ans A). physiological needs B). esteem needs C). self-actualisation needs D). social needs Correct Answer: A

Q.73 Compared to axial flow pumps, radial flow pumps typically:

Ans A). generate higher pressures with lower flow rates B). are used exclusively for pumping gases C). have lower efficiency in all applications D). produce higher flow rates at lower pressures Correct Answer: A

Q.74 An engine is assumed to be working on ideal Otto cycle with the temperatures at the beginning and end of compression as 27°C and 327°C . The air-standard efficiency of the engine is:

Ans A). 87% B). 78% C). 60% D). 50% Correct Answer: D

Q.75 Manometric head is defined as:

Ans A). the height of a fluid column corresponding to the pump's output pressure B). the weight of the pump C). the temperature difference across the pump D). the fluid velocity within the pump Correct Answer: A

Q.76 Which of the following material has the highest compressive strength?

Ans A). Copper B). Mild Steel C). Rubber D). Cast Iron Correct Answer: D

Q.77 Which of the following represents the polar modulus of the hollow shaft?
[If D_o = External diameter and D_i = Internal diameter]

Ans A). $\left[\frac{16\pi}{D_o} \right] [D_o^4 - D_i^4]$ B). $\left[\frac{\pi}{16D_o} \right] [D_o^3 - D_i^3]$ C). $\left[\frac{\pi}{16D_o} \right] [D_o^4 - D_i^4]$ D). $\left[\frac{16}{\pi D_o} \right] [D_o^4 - D_i^4]$ Correct Answer: C

Q.78 While scheduling decisions, the most influencing parameter is:

Ans A). market research B). sales forecasting C). competitor pricing D). availability of skilled personnel Correct Answer: B

Q.79 In an ideal four-stroke petrol engine, the assumption made about the burning process during the power stroke i.e. after compression is:

Ans A). It occurs instantaneously when the piston is at the top dead centre.
B). It starts at the bottom dead centre and continues as the piston moves up.
C). It is a gradual process that starts before the piston reaches top dead centre. D). It takes a significant amount of time. Correct Answer: A

Q.80 In the Charpy impact test, the specimen is typically:

Ans A). a cylindrical rod with no defects B). a rectangular bar with a notch in the middle C). a sheet of material placed under compression D). subjected to a gradual tensile load Correct Answer: B

Q.81	A steel bar ($E = 200E = 200$, $\alpha = 12 \times 10 - 6/^{\circ}\text{C}$) expands by 0.3 mm due to a temperature increase. If the original length of the bar was 15 cm, what was the temperature rise?				
Ans	A). 166.6°C	B). 100°C	C). 180°C	D). 120.6°C	Correct Answer: A
Q.82	What is the capability of a profilometer instrument?				
Ans	A). Measure surface waviness only	B). Measure surface roughness only	C). Measure surface flaws only	D). Measure roughness together with waviness and any other surface flaws	Correct Answer: D
Q.83	What will be the nature of longitudinal stress in a thin closed cylinder containing hydrostatic fluid pressure?				
Ans	A). Bending	B). Shear	C). Compressive	D). Tensile	Correct Answer: D
Q.84	Which of the following happens when two equal and opposite forces are applied at a point on a rigid body?				
Ans	A). They produce an additional force on the body.	B). They create rotational motion in the body.	C). They cancel each other and have no effect.	D). They change the magnitude of the original force.	Correct Answer: C
Q.85	One challenge associated with double volute casings is:				
Ans	A). increased complexity in manufacturing and alignment	B). higher risk of leakage due to multiple seams	C). decreased efficiency in converting kinetic to pressure energy	D). reduced flow rates	Correct Answer: A
Q.86	To machine an internal hole in a broaching operation, the broach is gripped by the _____.				
Ans	A). puller at the pilot	B). puller at the face of the teeth	C). puller at the flute	D). puller at the shank end	Correct Answer: A
Q.87	Which of the following is the surface coating process?				
Ans	A). Tumbling	B). Hot doping	C). Hot dipping	D). Pickling	Correct Answer: C
Q.88	Which of the following is a limitation of taper turning by swiveling the compound rest?				
Ans	A). It ensures the best surface finish.	B). It is suitable only for short tapers.	C). It provides high production efficiency.	D). It cannot turn any type of taper.	Correct Answer: B
Q.89	What is the designated function of a 'planetary internal grinder machine'?				
Ans	A). For a work piece of irregular shape	B). For a very small work piece	C). For a work piece of regular shape	D). For low precision surface finishes	Correct Answer: A
Q.90	Which of the following processes produces the minimum surface roughness on workpieces?				
Ans	A). Honing	B). Superfinishing	C). Grinding	D). Lapping	Correct Answer: B
Q.91	How does the volute shape in a single volute pump casing affect performance?				
Ans	A). It helps maintain a uniform flow distribution.	B). It increases turbulence within the pump.	C). It restricts the pump's operating range.	D). It serves only an aesthetic purpose.	Correct Answer: A
Q.92	The factor considered for wage determination in the flat day rate basic wage incentive plan is:				
Ans	A). individual performance	B). number of pieces produced	C). company profit	D). hours worked	Correct Answer: D
Q.93	Which of the following is an operational function that comes under pre-planning?				
Ans	A). Dispatching	B). Material planning and control	C). Loading	D). Forecasting	Correct Answer: D
Q.94	The master production schedule represents the:				
Ans	A). starting time of component manufacturing	B). financial requirements for the production	C). starting and finishing time of different products	D). finishing time of component manufacturing	Correct Answer: C

Q.95 Priming of a pump refers to:

Ans A). removing air from the pump casing and suction line B). lubricating the pump bearings C). increasing the rotational speed of the pump
D). adjusting the impeller clearance

Correct Answer: A

Q.96 The primary purpose of a shadow projector is to ____.

Ans A). detect internal flaws in a material B). analyse material composition C). produce an undistorted magnified reflected image of an object
D). measure surface roughness

Correct Answer: C

Q.97 The Bell-Coleman cycle is also known as:

Ans A). Reversed Brayton cycle B). Brayton cycle C). Rankine cycle D). Carnot cycle

Correct Answer: A

Q.98 For a symmetrical T-section, the moment of inertia through centroidal axes in its plane parallel to the flange $I_{xx} = 2 \times 10^7 \text{ mm}^4$, and perpendicular to the flange is $I_{yy} = 1.5 \times 10^7 \text{ mm}^4$. The moment of inertia about the centroidal axis normal to the planar area works out to (in mm^4):

Ans A). 1.33×10^7 B). 2.5×10^7 C). 3.5×10^7 D). 0.5×10^7

Correct Answer: C

Q.99 Which of the following best defines vapour pressure in a liquid?

Ans A). The pressure exerted by the vapour in equilibrium with its liquid at a given temperature
B). The pressure exerted by the liquid molecules C). The pressure required to force the liquid into a capillary tube
D). The difference between atmospheric pressure and absolute pressure

Correct Answer: A

Q.100 Which of the following options best describes non-coplanar concurrent forces?

Ans A). Forces that meet at one point but their lines of action do not lie on the same plane
B). Forces that do not meet at one point and their lines of action lie on the same plane
C). Forces that meet at one point and their lines of action lie on the same plane
D). Forces that do not meet at one point but their lines of action lie on different planes

Correct Answer: A



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Electronics and Allied Engineering

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?

Ans A). 2008 B). 2005 C). 2015 D). 2014

Correct Answer: C

Q.2 Why does a bee sting cause pain and irritation?

Ans A). The sting releases carbon dioxide gas. B). The sting injects a mild sugar solution. C). The sting injects methanoic acid.
D). The sting contains a strong base.

Correct Answer: C

Q.3 If the absolute refractive index of a medium is less than 1, it means _____.

Ans A). light travels faster in that medium than in vacuum B). the medium is a perfect reflector C). the medium absorbs all light
D). light travels slower in that medium than in vacuum

Correct Answer: A

Q.4 Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?

Ans A). Meta B). Google C). Microsoft D). Amazon

Correct Answer: A

Q.5 In an electric circuit, what is the correct way to connect an ammeter?

Ans A). In parallel with the source B). In parallel with the component C). In series with the component D). In either series or parallel

Correct Answer: C

Q.6 The phenomenon of multiple echoes due to repeated reflections is called _____.

Ans A). resonance B). reverberation C). refraction D). diffraction

Correct Answer: B

Q.7 In which of the following regions the Himalayas has the greatest width?

Ans A). Himachal Pradesh B). Sikkim C). Kashmir D). Arunachal Pradesh

Correct Answer: C

Q.8 Which of the following correctly explains why clothes dry faster on a windy day?

Ans A). Wind increases the humidity around the clothes. B). Wind reduces the surface area of the clothes.
C). Wind decreases the temperature of the water molecules. D). Wind removes the water vapour from the clothes' surroundings.

Correct Answer: D

Q.9 The Rudra Veena is predominantly associated with which genre of Hindustani music?				
Ans A). Khayal	B). Ghazal	C). Dhrupad	D). Thumri	Correct Answer: C
Q.10 What does PCB stand for?				
Ans A). Printed Circuit Board	B). Processing Circuit Board	C). Primary Control Board	D). Peripheral Connection Bus	Correct Answer: A
Q.11 Which of the following is a characteristic difference between colloids and true solutions?				
Ans A). True solutions have a single-phase system, whereas colloids have a two-phase system. B). True solutions exhibit Brownian motion, but colloids do not. C). True solutions have visible solute particles, whereas colloids have invisible dispersed particles. D). True solutions show the Tyndall effect, but colloids do not.				
Correct Answer: A				
Q.12 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Herbicides	B). Fungicides	C). Pesticides	D). Organic fertilisers	Correct Answer: D
Q.13 What is the approximate pH of a neutral salt solution?				
Ans A). More than 7	B). Less than 7	C). Depends on the temperature	D). Equal to 7	Correct Answer: D
Q.14 Which official in the Gupta administration was responsible for peace and war matters?				
Ans A). Mahapratihara	B). Vishayapati	C). Mahadandanayaka	D). Sandhi-Vigrahika	Correct Answer: D
Q.15 The glass panel used in greenhouses is known to retain _____.				
Ans A). humidity	B). pH	C). heat	D). rainfall	Correct Answer: C
Q.16 The fine powder that is obtained from the modified and recycled form of plastic is called _____.				
Ans A). polyblend	B). polyethylene	C). polythene	D). polystyrene	Correct Answer: A
Q.17 If an object is dropped from rest, what will be its velocity after 15 seconds? (g = 9.8 m/s²)				
Ans A). 143 m/s	B). 147 m/s	C). 149 m/s	D). 145 m/s	Correct Answer: B
Q.18 What is the first step to securing ones smartphone or tablet?				
Ans A). Setting a password/PIN-protected lock screen B). Using only free Wi-Fi networks C). Turning off mobile data D). Installing more apps Correct Answer: A				
Q.19 What is India's global military ranking in the 2025 Global Firepower (GFP) index?				
Ans A). 4 th	B). 2 nd	C). 5 th	D). 3 rd	Correct Answer: A
Q.20 Which of the following is the correct way to insert a new column in a spreadsheet?				
Ans A). Use Ctrl + Z to insert a column. B). Go to File > New > Column. C). Go to Home > Insert > Insert Sheet Columns. D). Press Ctrl + X and then Insert.				
Correct Answer: C				
Q.21 Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?				
Ans A). Kolkata	B). Mumbai	C). New Delhi	D). Chennai	Correct Answer: C
Q.22 Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?				
Ans A). Article 77	B). Article 78	C). Article 53	D). Article 88	Correct Answer: D
Q.23 Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?				
Ans A). Directive Principles of State Policy	B). Fundamental Duties	C). Fundamental Rights	D). Preamble	Correct Answer: A

Q.24	What is the net force acting on an object if balanced forces are applied?			
Ans	A). Equal to the mass of the object	B). Infinite	C). Equal to acceleration	D). Zero Correct Answer: D
Q.25	The main use of chlorofluorocarbons is in _____.			
Ans	A). smog	B). refrigerants	C). chimneys	D). vehicles Correct Answer: B
Q.26	The energy that is derived from the use of radioactive isotopes is termed as _____.			
Ans	A). solar energy	B). thermal energy	C). geothermal energy	D). nuclear energy Correct Answer: D
Q.27	Which of the following is NOT a source of release of smokestacks?			
Ans	A). Smelters	B). Thermal power plants	C). Rivers	D). Industries Correct Answer: C
Q.28	What is the shortcut key to start a slideshow from the beginning?			
Ans	A). F5	B). Ctrl + P	C). Alt + Tab	D). Shift + F5 Correct Answer: A
Q.29	The maximum sound is generated _____.			
Ans	A). by the take off of a jet plane	B). from vehicular emissions	C). from industrial smoke	D). from house chimneys Correct Answer: A
Q.30	Which of the following states is NOT covered under the Atal Bhujal Yojana?			
Ans	A). Maharashtra	B). Uttar Pradesh	C). Rajasthan	D). Jharkhand Correct Answer: D
Q.31	Inertia depends on which property of an object?			
Ans	A). Shape	B). Acceleration	C). Velocity	D). Mass Correct Answer: D
Q.32	According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?			
Ans	A). 20%	B). 27.5%	C). 15.5%	D). 25.7% Correct Answer: D
Q.33	What happens when an acid reacts with a metal oxide?			
Ans	A). A salt and water are formed. B). Only water is formed. C). Only salt is formed. D). A salt and hydrogen gas are formed. Correct Answer: A			
Q.34	Which defect of vision occurs due to the weakening of ciliary muscles with age?			
Ans	A). Myopia	B). Presbyopia	C). Astigmatism	D). Hypermetropia Correct Answer: B
Q.35	Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.			
Ans	A). $\text{Mg}_2(\text{PO}_4)_3$	B). MgPO_4	C). $\text{Mg}(\text{PO}_4)_3$	D). $\text{Mg}_3(\text{PO}_4)_2$ Correct Answer: D
Q.36	What happens when a computer is put into Sleep mode?			
Ans	A). It shuts down completely. B). It stores data on the hard drive and powers off. C). It keeps the session active in RAM while using minimal power. D). It restarts automatically after a few minutes. Correct Answer: C			
Q.37	The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.			
Ans	A). phosphate	B). bacterium	C). nitrate	D). chloride Correct Answer: B
Q.38	The Industrial Policy Resolution of 1956 categorised industries into how many groups?			
Ans	A). Five	B). Nine	C). Seven	D). Three Correct Answer: D
Q.39	What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?			
Ans	A). Toggles between absolute and relative references B). Repeats the last action C). Opens the Find and Replace dialog D). Refreshes the worksheet Correct Answer: A			

Q.40 What is the primary purpose of using a firewall on a Personal Computer?

Ans A). To block unauthorised access and protect the computer B). To clean up temporary files C). To increase storage space
D). To speed up internet connectivity

Correct Answer: A

Q.41 What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?

Ans A). 20% of Lok Sabha strength B). 15% of Lok Sabha strength C). 10% of Lok Sabha strength D). 12% of Lok Sabha strength

Correct Answer: B

Q.42 Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?

Ans A). Al_2SO_4 B). $\text{Al}(\text{SO}_4)_3$ C). $\text{Al}_2(\text{SO}_4)_3$ D). $\text{Al}_3(\text{SO}_4)_2$

Correct Answer: C

Q.43 The practice of Jhum cultivation is prevalent in the _____.

Ans A). North west B). North east C). South east D). South west

Correct Answer: B

Q.44 What was the main objective of the Extremists during the Indian National Movement?

Ans A). To expand the legislative councils B). To promote British goods in India C). To attain complete independence (Swaraj)
D). To bring social reforms

Correct Answer: C

Q.45 Which of the following is NOT a component of a CPU?

Ans A). Cache Memory B). Arithmetic Logic Unit (ALU) C). Hard Disk D). Control Unit (CU)

Correct Answer: C

Q.46 If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.

Ans A). Bcc B). Cc C). To D). Subject

Correct Answer: B

Q.47 What is the purpose of the Collation option in the Print settings?

Ans A). To adjust the page orientation B). To select a custom print range C). To change the printer selection
D). To print all the pages of a document as a set

Correct Answer: D

Q.48 Who among the following inaugurated the 38th National Games held in Dehradun in January 2025?

Ans A). Droupadi Murmu B). Pushkar Singh Dhami C). Narendra Modi D). Anurag Thakur

Correct Answer: C

Q.49 Which state of matter shows the highest expansion when temperature is increased?

Ans A). Plasma B). Solids C). Gases D). Liquids

Correct Answer: C

Q.50 Which of the following CANNOT be considered as a measure to control global warming?

Ans A). Causing deforestation B). Cutting down use of fossil fuel C). Efficiently using energy D). Reduction in emission of greenhouse gases

Correct Answer: A

Q.1 The magnetic field inside a solenoid is:

Ans A). circular and varying with distance B). zero C). uniform and parallel D). non-uniform and divergent

Correct Answer: C

Q.2 Co-axial cables are most commonly used in which of the following applications?

Ans A). Underwater communication B). Satellite communication C). Cable television (CATV) systems D). Wireless communication networks

Correct Answer: C

Q.3 For an RC phase shift oscillator, which of the following statements is INCORRECT?

- Ans A). The total phase shift of the RC network is 180° . B). The magnitude of the gain of the RC network is $> 1/29$.
C). The magnitude of gain of the amplifier must be ≥ 29 . D). The oscillation frequency of the oscillator is $\frac{1}{2\pi RC\sqrt{6}}$.

Correct Answer: B

Q.4 What is the primary goal of simplifying a Boolean expression before implementing it with gates?

- Ans A). To make the circuit slower B). To increase the number of gates C). To reduce the number of gates and interconnections
D). To increase power consumption

Correct Answer: C

Q.5 What material is primarily used as the core in fiber optic cables?

- Ans A). Copper B). Plastic C). Aluminium D). Glass

Correct Answer: D

Q.6 The magnetic field outside a toroidal coil:

- Ans A). is zero B). is in a circular pattern around the toroid C). is uniform and points radially outward D). is uniform and points radially inward

Correct Answer: A

Q.7 What type of error occurs due to unpredictable variations in measurement conditions?

- Ans A). Gross error B). Random error C). Calibration error D). Systematic error

Correct Answer: B

Q.8 Which of the following statements w.r.t. FSK demodulation using PLL circuit is/are correct?

S1: If the input signal frequency changes, the PLL adjusts its frequency output to match the input frequency.

S2: The phase-locked loop is used to track the changes in the frequency of the modulated signal.

- Ans A). Only S1 B). Only S2 C). Neither S1 nor S2 D). Both S1 and S2

Correct Answer: D

Q.9 Which of the following is NOT a type of loop in C?

- Ans A). do-while loop B). foreach loop C). while loop D). for loop

Correct Answer: B

Q.10 Which of the following is an example of a Wide Area Network (WAN)?

- Ans A). A home Wi-Fi network B). The internet C). A Bluetooth connection D). A local office network

Correct Answer: B

Q.11 What type of distortion occurs if a signal that contains frequency components up to 15 kHz is sampled using 20 kHz?

- Ans A). Quantization error B). Aliasing C). Slope Overload D). No distortion

Correct Answer: B

Q.12 The function of pin 18 and 19 (XTAL1 and XTAL2) in 8051 Microcontroller is _____.

- Ans A). to control external interrupt B). oscillator connection for clock generation C). address and data bus decoding
D). serial data transmission

Correct Answer: B

Q.13 The Multiplexed address and Data lines in the 8085 microprocessor are _____.

- Ans A). AD7 - AD0 B). AD8- AD1 C). AD8- AD15 D). AD9 - AD16

Correct Answer: A

Q.14 Which of the following is a key feature of a microprocessor-based overcurrent relay that enhances its performance in fault detection?

- Ans A). It uses analogue components to process current signals. B). It only protects against short-circuit faults.
C). It incorporates fault analysis algorithms to identify fault types. D). It does not require a power supply for operation.

Correct Answer: C

Q.15 What does 'PROM' stand for?

- Ans A). Processing Read-Only Memory B). Peripheral Read-Only Memory C). Primary Read-Only Memory
D). Programmable Read-Only Memory

Correct Answer: D

Q.16 Which of the following statements are true regarding the eye diagram in the communication system?

- a) An eye diagram is used to investigate Intersymbol interference.
- b) The width of the eye-opening indicates an interval where the wave can be sampled without ISI.
- c) Eye diagram is observed in Digital storage oscilloscope.

Ans A). Only a and c B). a, b and c C). Only a and b D). Only b and c

Correct Answer: B

Q.17 The IO/M' signal in the 8085 microprocessor specifies _____.

Ans A). whether an interrupt has occurred B). whether the data is valid C). whether the operation is read or write
D). whether the operation is memory or I/O related

Correct Answer: D

Q.18 In the 8085 microprocessor, _____ instruction is used to identify pending interrupts.

Ans A). ANI B). SIM C). RIM D). LXI

Correct Answer: C

Q.19 How do you declare a pointer to an integer?

Ans A). int *ptr; B). pointer int ptr; C). int ptr*; D). int ptr;

Correct Answer: A

Q.20 The 8051 microcontroller has _____ I/O pins.

Ans A). 24 B). 40 C). 26 D). 32

Correct Answer: D

Q.21 The bandwidth of a raised cosine filter with roll-off factor β (0 to 1) and symbol rate R_s is given by:

Ans A). $BW = R_s(2\beta + 1)$ B). $BW = R_s(\beta + 1)$ C). $BW = \frac{R_s}{2}(\beta^2 + 1)$ D). $BW = \frac{R_s}{2}(\beta + 1)$

Correct Answer: D

Q.22 Which of the following statements best describes the operation of a bridge rectifier?

Ans A). In a bridge rectifier, current flows through two diodes during both positive and negative half cycles, leading to very high-power loss.
B). The peak inverse voltage (PIV) of diode in a bridge rectifier is the same as in a center-tapped rectifier.
C). The output voltage of a bridge rectifier consists of only DC components with no AC ripples.
D). The bridge rectifier is a full-wave rectifier that does not require a center-tapped transformer, improving transformer efficiency.

Correct Answer: D

Q.23 In which of the following electrical applications is a glass insulating material commonly used?

Ans A). Power cables and conductors B). High-voltage switchgear and transformers C). Low-voltage electronic circuits
D). Electrical wires for home appliances

Correct Answer: B

Q.24 What happens to the carry-out bit when subtracting two n-bit numbers using 2's complement and the result is positive?

Ans A). The carry-out bit indicates an overflow B). The carry-out bit is added to the result C). The carry-out bit is inverted
D). The carry-out bit is ignored

Correct Answer: D

Q.25 The output voltage of an IC 7905 is _____.

Ans A). 15 V B). 5 V C). -15 V D). -5 V

Correct Answer: D

Q.26 Which of the options is correct for a non-inverting OP-AMP?

Ans A). Input is applied at the inverting terminal of OP-AMP. B). Non-inverting terminal of OP-AMP is grounded.
C). For an negative input, output is positive. D). Output is in phase with input.

Correct Answer: D

Q.27 A Zener diode has a breakdown voltage of $V_z = 7$ V at 300 K, with a temperature coefficient of 2.3 mV/°C. What is the new breakdown voltage V_z at 400 K?

Ans A). 7 V B). 7.23 V C). 6.77 V D). 6.977 V

Correct Answer: B

Q.28 For a diode operating in forward bias, which of the following statements is INCORRECT?

- Ans** A). The reduction in the width of the depletion region is due to the recombination of charge carriers and immobile ions near the junction.
B). The reduction in the potential barrier occurs due to the narrowing of the depletion region.
C). The reduction in the depletion region allows a majority carrier flow across the junction.
D). The reduction in the depletion region causes a heavy flow of minority carriers across the junction.

Correct Answer: D

Q.29 A bridge-rectifier is connected to a $24 \sin(\omega t)$ V supply. What is the peak inverse voltage (PIV) across the diode?

- Ans** A). $48/\pi$ V B). 24 V C). 12 V D). $24/\pi$ V

Correct Answer: B

Q.30 What is the primary function of the cathode ray tube (CRT) in an oscilloscope?

- Ans** A). To display waveforms of the electrical signals B). To amplify the electrical signals C). To measure the frequency of the signals
D). To convert the electrical signals into sound

Correct Answer: A

Q.31 Which of the following statements is correct regarding the ripple factor of different rectifiers?

- Ans** A). A bridge rectifier has a better ripple factor than a centre-tapped rectifier.
B). A full-wave rectifier has a higher ripple factor than a half-wave rectifier.
C). A half-wave rectifier has more than twice the ripple factor of a full-wave rectifier.
D). A rectifier with a higher ripple factor is more preferable for DC power supply than one with a lower ripple factor.

Correct Answer: C

Q.32 What are the input and output impedances of a voltage-series feedback amplifier?

Given:

Input impedance without feedback: $R_i = 5 \text{ k}\Omega$

Output impedance without feedback: $R_o = 10 \text{ k}\Omega$

Feedback factor: $A\beta = 19$

- Ans** A). 0.25 k Ω , 0.5 k Ω B). 100 k Ω , 200 k Ω C). 0.25 k Ω , 200 k Ω D). 100 k Ω , 0.5 k Ω

Correct Answer: D

Q.33 In common collector configuration of BJT, which of the following options is correct?

- Ans** A). It has very high input impedance due to the presence of emitter resistance.
B). It has a lower input impedance than a common-emitter amplifier.
C). The input characteristics are a plot of input current (I_B) vs. input voltage (V_{BE}) for a constant I_E .
D). If the emitter resistance is bypassed with a capacitor, the input impedance increases.

Correct Answer: A

Q.34 In circuit switching, a dedicated communication path is established between the sender and the receiver. This technique is primarily used in which of the following networks?

- Ans** A). Cellular networks B). Internet C). Wireless Local Area Networks (WLANs) D). Public Switched Telephone Network (PSTN)

Correct Answer: D

Q.35 Which modulation technique is used to avoid phase ambiguity in BPSK?

- Ans** A). QPSK (Quadrature Phase Shift Keying) B). ASK (Amplitude Shift Keying) C). FSK (Frequency Shift Keying)
D). DPSK (Differential Phase Shift Keying)

Correct Answer: D

Q.36 Which Boolean expression correctly represents the Difference (D) output of a Full Subtractor?

- Ans** A). $D = A \oplus B$ B). $D = A \text{ AND } B$ C). $D = A \oplus B \oplus \text{Cout}$ D). $D = A \oplus B \oplus \text{Bin}$

Correct Answer: D

Q.37 One of the main advantages of AAAC (All Aluminium Alloy Conductor) over AAC (All Aluminium Conductor) is:

- Ans** A). increased weight for better mechanical strength B). higher corrosion resistance C). reduced cost of production D). lower conductivity

Correct Answer: C

Q.38 In the case of a 360° phase shift between two signals, the time delay will be equal to:

- Ans** A). half the period of the signal B). a quarter of the period of the signal C). twice the period of the signal D). one period of the signal

Correct Answer: D

Q.39 Which of the following are Pulse Time Modulation (PTM) techniques?

Ans A). PAM and PCM B). PDM and PCM C). PPM and PAM D). PWM and PPM

Correct Answer: D

Q.40 Which of the following factors is directly proportional to the eddy current loss in magnetic materials?

Ans A). Magnetic field frequency B). Thickness of the material C). Temperature of the material D). Permeability of the material

Correct Answer: B

Q.41 In a circuit, if the voltage across a resistor is doubled and the resistance remains constant, what happens to the current?

Ans A). The current remains the same. B). The current is halved. C). The current doubles. D). The current quadruples.

Correct Answer: C

Q.42 Which of the following characteristics is true for ferromagnetic materials?

Ans A). They retain their magnetisation even after the external magnetic field is removed.
B). They are weakly repelled by a magnetic field and have negative magnetic susceptibility.
C). They show no effect in a magnetic field and are considered neutral.
D). They are strongly attracted to a magnetic field but do not exhibit hysteresis.

Correct Answer: A

Q.43 What is the purpose of fscanf() in C?

Ans A). Writes formatted data to a file B). Reads formatted data from a file C). Closes a file D). Reads a single character from a file

Correct Answer: B

Q.44 Which Boolean expression correctly represents the Difference (D) output of a Full Subtractor?

Ans A). $D = A \oplus B \oplus \text{Cout}$ B). $D = A \oplus B \oplus \text{Bin}$ C). $D = A \oplus B$ D). $D = A \text{ AND } B$

Correct Answer: B

Q.45 In Frequency Modulation (FM), the carrier wave's _____ varies according to the message signal.

Ans A). phase B). wavelenth C). amplitude D). frequency

Correct Answer: D

Q.46 Which of the following gases is commonly used as an insulating material in electrical equipment due to its non-flammable nature and good dielectric strength?

Ans A). Hydrogen B). Nitrogen C). Carbon dioxide D). Oxygen

Correct Answer: B

Q.47 How is a multi-dimensional array stored in the memory?

Ans A). Column-wise (Column-major order) B). Randomly C). Depends on the compiler D). Row-wise (Row-major order)

Correct Answer: D

Q.48 If the open-loop gain of an op-amp is 105 and the input voltage is 100 mV, the value of output voltage is _____ assuming a supply of ± 15 V.

Ans A). 10^4 V B). 15 V C). 0 V D). 100 V

Correct Answer: B

Q.49 Which of the following factors primarily affects the insulation resistance of a material?

Ans A). The temperature of the material B). The colour of the insulation C). The frequency of the applied voltage
D). The thickness of the conductor

Correct Answer: A

Q.50 Which of the following best defines the sensitivity of a protective relay?

Ans A). The ability of the relay to discriminate between different types of faults.
B). The capacity of the relay to handle high fault currents without damage.
C). The ability of the relay to detect and respond to very small fault currents. D). The time it takes for the relay to react after detecting a fault.

Correct Answer: C

Q.51 What is the primary effect of the annealing process on conducting materials such as copper and aluminium?

Ans A). It increases tensile strength and hardness. B). It causes oxidation of the material's surface.
C). It reduces electrical resistance by decreasing the number of dislocations. D). It increases the material's brittleness.

Correct Answer: C

Q.52 Which of the following is/are an example of guided transmission media?

Ans A). Satellite communication B). Optical fibre C). Radio waves D). Infrared signals

Correct Answer: B

Q.53 DSB-SC, VSB and SSB modulation are types of:

Ans A). Frequency Modulation (FM) B). Amplitude Modulation (AM) C). Phase Modulation (PM) D). Digital Modulation

Correct Answer: B

Q.54 The high-frequency gain of a common-emitter amplifier is mainly affected by:

Ans A). collector-base junction capacitance and bypass capacitor B). collector-base junction capacitance and emitter-base capacitance
C). coupling capacitor and collector-base junction capacitance D). coupling capacitor and bypass capacitor

Correct Answer: B

Q.55 What will happen if a break statement is omitted in a switch case?

Ans A). The compiler will show an error. B). The next case will continue to be executed. C). The program will stop execution.
D). The program will exit.

Correct Answer: B

Q.56 To increase the word size of a memory system, which of the following techniques is typically used?

Ans A). Memory interleaving B). Memory mapping C). Address decoding D). Parallel memory modules

Correct Answer: C

Q.57 Which of the following is the correct octal representation of the hexadecimal number 1A3?

Ans A). 346 B). 124 C). 634 D). 643

Correct Answer: D

Q.58 In a PLL-based FM demodulator, the output of the phase detector is proportional to _____.

Ans A). the carrier frequency of the FM signal B). the amplitude of the FM signal C). the frequency deviation of the FM signal
D). the phase difference between the FM signal and the VCO output

Correct Answer: D

Q.59 In a series magnetic circuit, if the reluctance of one path increases, what will happen to the total magnetic flux in the circuit?

Ans A). The total flux will increase. B). The total flux will remain unchanged. C). The flux will divide equally between paths.
D). The total flux will decrease.

Correct Answer: D

Q.60 A radio receiver is tuned to 560 kHz, and its local oscillator frequency is 1,000 kHz. At the output, another signal is also received along with the desired signal. What is the frequency of the other station?

Ans A). 2,440 kHz B). 560 kHz C). 440 kHz D). 1,440 kHz

Correct Answer: D

Q.61 Which of the following is a primary characteristic of low resistivity materials used in electrical conductors?

Ans A). High insulation properties and poor conductivity B). High thermal resistance and poor conductivity C). High cost and low flexibility
D). High conductivity and low resistivity

Correct Answer: D

Q.62 Which function is used to read a single character from the console in C?

Ans A). getchar() B). scanf() C). printf() D). puts()

Correct Answer: A

Q.63 The vertical deflection of the CRT oscilloscope is proportional to the:

Ans A). frequency of the input signal B). horizontal sweep rate C). amplitude of the input signal D). phosphor intensity

Correct Answer: C

Q.64 What is the primary purpose of the graticule in an oscilloscope screen?

Ans A). To focus the electron beam B). To provide a scale for measuring waveform amplitude and time C). To convert electrical signals into light
D). To display the frequency of the signal

Correct Answer: B

Q.65 The function of a low pass filter in phase locked loop is _____.

Ans A). to remove the high frequency noise present B). to demodulate the output signal C). to remove the dc component from the signal
D). to increase the frequency of the input signal

Correct Answer: A

Q.66 _____ is a DMA controller which has four independent channels, CH0 to CH3.			
Ans A). 8086	B). 8237	C). 8088	D). 8051
Correct Answer: B			
Q.67 What is the result of applying the complement law $A + A'$ in Boolean algebra?			
Ans A). A	B). 1	C). 0	D). $\overline{A}$
Correct Answer: B			
Q.68 Which of the following is a major advantage of Unshielded Twisted Pair (UTP) cables compared to Shielded Twisted Pair (STP)?			
Ans A). Better performance in industrial environments	B). Lower cost and easier installation	C). Complete resistance to EMI	D). Higher durability
Correct Answer: B			
Q.69 How many distinct states are there are in an n-bit ring counter?			
Ans A). $\frac{n}{2}$	B). n	C). 2n	D). 2^n
Correct Answer: B			
Q.70 What is the primary purpose of the metallic shield in a co-axial cable?			
Ans A). To increase bandwidth capacity	B). To provide structural support	C). To protect against electromagnetic interference (EMI)	D). To reduce signal attenuation
Correct Answer: C			
Q.71 A memory chip has a capacity of 4 kB. How many address lines are required?			
Ans A). 10	B). 12	C). 16	D). 14
Correct Answer: B			
Q.72 Which of the following is NOT correct for a voltage-series feedback amplifier?			
Ans A). Also known as a transconductance amplifier.	B). Increases input impedance and decreases output impedance.	C). A non-inverting op-amp is an example of a voltage-series feedback amplifier.	D). Also known as a voltage-controlled voltage source.
Correct Answer: A			
Q.73 Which of the following is the main purpose of SNMP?			
Ans A). Encrypting network data	B). Monitoring and managing network devices	C). Providing authentication for web servers	D). Facilitating file transfers
Correct Answer: B			
Q.74 Which of the following is a characteristic of serial binary adders?			
Ans A). Each full adder waits for the carry from the previous full adder.	B). The carry propagation delay is minimised.	C). They perform addition in parallel.	D). They use a carry lookahead mechanism.
Correct Answer: A			
Q.75 Which of the following is the correct definition of the capacity of a battery?			
Ans A). The maximum current a battery can provide	B). The maximum voltage a battery can generate	C). The total energy a battery can deliver over a period of time	D). The amount of charge a battery can store and deliver over a specific time period
Correct Answer: D			
Q.76 What does the format specifier %10d in printf("%10d", num); do?			
Ans A). Prints the number with leading zeros in a field of 10 columns	B). Prints the number in a field of 10 columns	C). Prints only the number without any extra spaces	D). Prints the number left-aligned in a field of 10 columns
Correct Answer: B			
Q.77 Which of the following characteristics does a piezoelectric transducer exhibit when subjected to mechanical stress?			
Ans A). Change in temperature	B). Change in frequency	C). Resistance change	D). Voltage generation
Correct Answer: D			
Q.78 Narrowband FM is used in which of the following applications?			
Ans A). Television transmission	B). High-fidelity audio systems	C). FM radio broadcasting	D). Two-way mobile radio communication
Correct Answer: D			
Q.79 What is the main role of Port 2 in the 8051 microcontroller during external memory access?			
Ans A). It serves as a control signal for serial communication.	B). It acts as a general-purpose I/O port.	C). It functions as a data register.	D). It provides the high-order address byte.
Correct Answer: D			

Q.80	Which port of the 8051 microcontroller functions as a bidirectional I/O and simultaneously acts as an address/data bus for external memory access?			
Ans	A). Port 1	B). Port 3	C). Port 0	D). Port 4
	Correct Answer: C			
Q.81	A special diode with 0 Ω forward resistance and 1 kΩ reverse resistance is connected in series with a 1 kΩ load resistor. A square wave input is applied with: Maximum voltage ($V_{\max}$) = 4 V Minimum voltage ($V_{\min}$) = -4 V What is the output voltage across the load when the diode is in reverse bias?			
Ans	A). -2 V	B). -4 V	C). +2 V	D). 0 V
	Correct Answer: A			
Q.82	Which factor is primarily responsible for distortion in a transmitted signal?			
Ans	A). External electromagnetic interference B). Signal attenuation C). Variations in the propagation speed of different frequencies D). Excessive bandwidth usage			
	Correct Answer: C			
Q.83	Which of the following statements about a Hartley oscillator is correct?			
Ans	A). An RL network is used in the design of Hartley oscillators. B). The Hartley oscillator is commonly used to generate signals below 50 Hz C). An RC network is used in the design of Hartley oscillators. D). It operates on the principle of parallel resonance.			
	Correct Answer: D			
Q.84	Which of the following statements is/are correct? S1: Filter controls the lock range of the PLL. S2: Filter controls the capture range of the PLL.			
Ans	A). Both S1 and S2	B). Neither S1 nor S2	C). Only S1	D). Only S2
	Correct Answer: D			
Q.85	Which of the following options is correct regarding the open-loop differential amplifier?			
Ans	A). Input is applied at inverting terminal only. B). Input is applied at non-inverting terminal only. C). Inputs are applied at both the inverting and non-inverting terminals. D). Output is always zero irrespective of the input applied at terminals.			
	Correct Answer: C			
Q.86	Which of the following statements is/are NOT correct regarding an IC 723? S1: The output voltage ranges from 2 to 37 volts. S2: The output current is up to 150 mA.			
Ans	A). Neither S1 nor S2	B). Only S2	C). Only S1	D). Both S1 and S2
	Correct Answer: A			
Q.87	Manganin is a copper-manganese alloy that is widely used in precision resistors and temperature-sensitive applications. Which of the following properties makes manganin particularly useful in these applications?			
Ans	A). High tensile strength and ductility B). High electrical conductivity C). Low temperature coefficient of resistance D). High thermal coefficient of resistance			
	Correct Answer: C			
Q.88	In a Cathode Ray Oscilloscope (CRO), how is a time delay measured?			
Ans	A). By varying the intensity of the electron beam B). By adjusting the brightness of the display C). By using the time base control and measuring the horizontal shift D). By changing the vertical deflection voltage			
	Correct Answer: C			
Q.89	Which of the following statements is FALSE for a common-base (CB) amplifier using a BJT?			
Ans	A). It has lower input impedance and higher output impedance. B). The output characteristics is a plot of output current (I_C) vs. output voltage (V_{CB}). C). The output impedance is lower than that of a common-emitter amplifier. D). The input characteristics is a plot of input current (I_E) vs. input voltage (V_{EB}).			
	Correct Answer: C			
Q.90	According to Laplace's Law of Magnetic Circuits, the magnetic field strength H in a core is directly proportional to the magnetomotive force (MMF) and inversely proportional to the length of the magnetic path. If the MMF is increased by a factor of 2, and the length of the magnetic path is halved, what will be the change in the magnetic field strength H?			
Ans	A). It will increase by a factor of 2. B). It will remain the same. C). It will double. D). It will increase by a factor of 4.			
	Correct Answer: D			

Q.91 If the input $I = 1$ and the select lines are $S_1 = 1$, and $S_0 = 0$, what will be the values of the four outputs in a 1-to-4 Demultiplexer?

- Ans A). Output 0 = 0, Output 1 = 1, Output 2 = 0, Output 3 = 0 B). Output 0 = 0, Output 1 = 0, Output 2 = 0, Output 3 = 1
C). Output 0 = 0, Output 1 = 0, Output 2 = 0, Output 3 = 0 D). Output 0 = 0, Output 1 = 0, Output 2 = 1, Output 3 = 0

Correct Answer: D

Q.92 The Time Setting Multiplier (TSM) of a relay is used to:

- Ans A). adjust the operating current threshold of the relay B). increase the current setting of the relay
C). modify the time delay based on fault severity D). decrease the time delay of the relay

Correct Answer: C

Q.93 In Digital Electronics, what does 'EE' in EEPROM stand for?

- Ans A). Extended Execution B). External Enable C). Electrically Erasable D). Enhanced Encryption

Correct Answer: C

Q.94 According to Carson's Rule, what is the approximate bandwidth required for a VHF/UHF two-way radio signal using FM with a 5 kHz maximum frequency deviation and a maximum audio frequency of 3 kHz?

- Ans A). 30 kHz B). 20 kHz C). 10 kHz D). 16 kHz

Correct Answer: D

Q.95 Sinc pulse shaping is derived from the Fourier Transform of a _____ function.

- Ans A). sine B). sawtooth C). triangular D). rectangular

Correct Answer: D

Q.96 In a Common Emitter (CE) BJT amplifier, which of the following options is correct?

- Ans A). The CE amplifier has the lowest input impedance among all the configurations.
B). Its input impedance is lower than CB configuration but higher than CC configuration.
C). The input characteristics are plotted between the input current (I_B) and input voltage (V_{BE}) at a constant I_C .
D). If the magnitude of the output voltage increases, the input current decreases.

Correct Answer: D

Q.97 Which of the following statements is NOT true about if-else statement in C?

- Ans A). An if-else statement cannot be nested inside another if-else statement.
B). If a condition is true, it is replaced by 1, if it false, it is replaced by 0.
C). An if need not always be associated with an else. However, an else must always be associated with an if.
D). The default scope of if and else statement is only the next statement. So, to execute multiple statements they must be written in a pair of braces.

Correct Answer: A

Q.98 Which of the following defines accuracy in measurement?

- Ans A). The variation in measurements due to environmental factors B). The closeness of a measured value to the true value
C). The ability to repeat the same measurement D). The smallest change that can be detected by an instrument

Correct Answer: B

Q.99 What is a recursive function?

- Ans A). A function that calls itself B). A function that calls other functions C). A function without parameters D). A function without a return type

Correct Answer: A

Q.100 How does DDR RAM achieve double the data transfer rate compared to SDRAM?

- Ans A). By increasing the clock frequency B). By using a wider data bus C). By reducing the refresh rate
D). By transferring data on both the rising and falling edges of the clock signal

Correct Answer: D



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Electronics and Allied Engineering

*** Note**

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 What is the primary function of a firewall tool in a computer network?

Ans A). To monitor and control incoming and outgoing network traffic B). To speed up internet connections C). To store data securely
D). To detect and remove viruses

Correct Answer: A

Q.2 Which function key is used to move text or graphics in a document?

Ans A). F2 B). F1 C). F12 D). F5

Correct Answer: A

Q.3 An alloy is considered a homogeneous mixture because:

Ans A). its components can be separated by filtration B). its components are chemically combined in fixed proportions
C). it exhibits uniform composition throughout D). it contains two or more phases

Correct Answer: C

Q.4 What is the general orientation of the Himalayan ranges in the northwestern part of India?

Ans A). East-South B). Northwest to Southeast C). South-North D). Northeast to Southwest

Correct Answer: B

Q.5 A metal wire is stretched, but it does not break easily. This property is known as:

Ans A). ductility B). brittleness C). hardness D). malleability

Correct Answer: A

Q.6 Which of the following is NOT a source of collection of municipal solid waste?

Ans A). Waste from hospitals B). Waste from homes C). Radioactive waste D). Waste from schools

Correct Answer: C

Q.7 A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?

Ans A). 16.67% B). 20% C). 25% D). 45%

Correct Answer: A

Q.8 Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?

Ans A). Jhulan Goswami B). Smriti Mandhana C). Mithali Raj D). Harmanpreet Kaur

Correct Answer: B

Q.9	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?			
Ans A).	FORMAT()	B). TEXT()	C). NUMBERTOTEXT()	D). VALUE() Correct Answer: B
Q.10	Which of the following elements has an atomic number of 8?			
Ans A).	Hydrogen	B). Nitrogen	C). Carbon	D). Oxygen Correct Answer: D
Q.11	The main reason for which we are dependent on air is our ____.			
Ans A).	osmoregulation	B). respiration	C). digestion	D). excretion Correct Answer: B
Q.12	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?			
Ans A).	macOS	B). Windows	C). Linux	D). iOS Correct Answer: C
Q.13	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year ____.			
Ans A).	1986	B). 1984	C). 1972	D). 1992 Correct Answer: A
Q.14	The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?			
Ans A).	Article 123	B). Article 72	C). Article 356	D). Article 110 Correct Answer: A
Q.15	Who among the following developed the notation system for Hindustani classical music?			
Ans A).	Ustad Bismillah Khan	B). Pandit Vishnu Narayan Bhatkhande	C). Pandit Ravi Shankar	D). Ustad Amjad Ali Khan Correct Answer: B
Q.16	Which of the following bridges is constructed over the Brahmaputra River in India?			
Ans A).	Dhola-Sadiya Bridge	B). Howrah Bridge	C). Pamban Bridge	D). Mahatma Gandhi Setu Correct Answer: A
Q.17	Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.			
Ans A).	diseases	B). emotional defects	C). mutations	D). syndromes Correct Answer: C
Q.18	Who is known as the leader of the Green Revolution in India?			
Ans A).	C Subramaniam	B). Prof. MS Swaminathan	C). Tribhuvandas Kishibhai Patel	D). Dr. Rajendra Prasad Correct Answer: B
Q.19	Which of the following will increase the heat produced by a heating element?			
Ans A).	Using a material with high conductivity	B). Using a wire of lower resistance	C). Decreasing the applied voltage	D). Increasing the current flowing through the wire Correct Answer: D
Q.20	Which type of RAM is faster and DOES NOT require refreshing?			
Ans A).	SRAM	B). Flash Memory	C). DRAM	D). ROM Correct Answer: A
Q.21	What is the primary function of a computer firewall?			
Ans A).	To speed up internet connectivity	B). To prevent unauthorised access to a private network	C). To detect and remove computer viruses	D). To store user passwords securely Correct Answer: B
Q.22	Why do covalent compounds generally have low melting and boiling points?			
Ans A).	They have weak intermolecular forces.	B). They have a rigid lattice structure.	C). They have strong electrostatic forces.	D). They contain metallic bonds. Correct Answer: A
Q.23	A concave lens has a focal length of -2 cm. What is its power?			
Ans A).	-0.5 D	B). 25 D	C). -50 D	D). 0.5 D Correct Answer: C

Q.24 Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?				
Ans A).	Carl Zeiss AG	B). Leica	C). Jenoptik	D). Schneider Kreuznach
Correct Answer: A				
Q.25 The people of _____ were famously involved in execution of the Chipko movement.				
Ans A).	Assam	B). Garhwal Himalayas	C). Gujarat	D). Delhi
Correct Answer: B				
Q.26 What does LAN stand for?				
Ans A).	Local Area Network	B). Linked Access Network	C). Limited Access Node	D). Large Area Network
Correct Answer: A				
Q.27 Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?				
Ans A).	=A2-B2	B). =A2*B2	C). =A2+B2	D). =MULTIPLY(A2,B2)
Correct Answer: B				
Q.28 Due to global warming, the temperature of the earth has increased by _____				
Ans A).	0.6°C	B). 0.7°C	C). 0.8°C	D). 0.5°C
Correct Answer: A				
Q.29 Which of the following correctly differentiates mixtures and compounds?				
Feature	Mixture	Compound		
A) Separation	Can be separated by physical methods	Requires chemical me		
B) Composition	Fixed ratio	Variable ratio		
C) Properties	Always the same as constituents	Different from constit		
D) Formation	By chemical reaction	By simple mixing		
Ans A).	Option B (Composition) is correct	B). Option D (Formation) is correct	C). Option C (Properties) is correct	
	D). Option A (Separation) is correct	Correct Answer: D		
Q.30 Who among the following established the Bengal Chemical Swadeshi Stores?				
Ans A).	Acharya PC Ray	B). BG Tilak	C). Dadabhai Naoroji	D). Surendranath Banerjee
Correct Answer: A				
Q.31 What happens to the pH of pure water when a few drops of lemon juice are added?				
Ans A).	The pH becomes neutral	B). The pH remains the same	C). The pH increases	D). The pH decreases
Correct Answer: D				
Q.32 Where can one find the option to change a PowerPoint template?				
Ans A).	Home → Layout	B). Insert → Themes	C). View → Slide Master	D). Design → Themes
Correct Answer: D				
Q.33 Which of the following was NOT an artisan guild during the Mauryan period?				
Ans A).	Carpenters	B). Astrologers	C). Bankers and Merchants	D). Potters
Correct Answer: B				
Q.34 Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?				
Ans A).	Ivor Jennings	B). BR Ambedkar	C). LM Singhvi	D). HM Seervai
Correct Answer: C				
Q.35 The kinetic energy of an object is derived using which of the following equations of motion?				
Ans A).	$v = u + at$	B). $v^2 - u^2 = 2as$	C). $a = (v - u) / t$	D). $s = ut + \frac{1}{2}at^2$
Correct Answer: B				
Q.36 The President has the power to dissolve which house of Parliament?				
Ans A).	Legislative Assembly	B). Both Rajya Sabha and Lok Sabha	C). Rajya Sabha only	D). Lok Sabha only
Correct Answer: D				
Q.37 The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.				
Ans A).	UV-B	B). UV-D	C). UV-A	D). UV-C
Correct Answer: A				

Q.38 Electricity production is categorised under which of the following economic sectors?				
Ans A). Quaternary sector	B). Tertiary sector	C). Secondary sector	D). Primary sector	Correct Answer: C
Q.39 In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.				
Ans A). chlorine	B). DDT	C). organochlorine	D). phosphates	Correct Answer: B
Q.40 A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?				
Ans A). 7.500 J	B). 3.750 J	C). 5.625 J	D). 1.875 J	Correct Answer: C
Q.41 Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?				
Ans A). France	B). United States	C). Sweden	D). Canada	Correct Answer: C
Q.42 What happens when you click on the 'Forward' button in an email?				
Ans A). The original message is copied into a new email draft. B). The email is automatically sent to all contacts. C). A blank email opens. D). The email is permanently deleted.				Correct Answer: A
Q.43 In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?				
Ans A). 600 metres T20	B). 400 metres T20	C). 200 metres T20	D). 100 metres T20	Correct Answer: B
Q.44 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Herbicides	B). Pesticides	C). Organic fertilisers	D). Fungicides	Correct Answer: C
Q.45 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?				
Ans A). Navigation with Indian Constellation (NavIC) B). Global Positioning System (GPS) C). Global Navigation Satellite System (GLONASS) D). Galileo				Correct Answer: A
Q.46 A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.				
Ans A). non-uniform motion	B). uniform motion	C). rotational motion	D). random motion	Correct Answer: B
Q.47 Which of the following options is NOT a greenhouse gas?				
Ans A). Methane	B). Carbon dioxide	C). Carbon tetrachloride	D). Nitrous oxide	Correct Answer: C
Q.48 The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?				
Ans A). 64 u	B). 128 u	C). 256 u	D). 32 u	Correct Answer: C
Q.49 A sound wave with a low frequency will have _____.				
Ans A). a high pitch	B). a low pitch	C). a low amplitude	D). a short wavelength	Correct Answer: B
Q.50 An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.				
Ans A). -37.5 cm	B). -10.0 cm	C). 17.5 cm	D). -9.37 cm	Correct Answer: A

Q.1 In the 8085 microprocessor, when RD signal is low and IO/M signal is high, the instruction is in the _____ cycle of execution.				
Ans A). I/O write	B). memory write	C). I/O read	D). memory read	Correct Answer: C
Q.2 In the communication of the PPM method, the information is encoded in the:				
Ans A). position of the pulse	B). power of the pulse	C). amplitude of the pulse	D). width of the pulse	Correct Answer: A

Q.3 Which of the following switching techniques breaks data into small packets that are transmitted independently over the network?

Ans A). Circuit Switching B). Message Switching C). Token Switching D). Packet Switching

Correct Answer: D

Q.4 For a bipolar junction transistor (BJT) working as an amplifier, which of the following options is INCORRECT?

Ans A). For the emitter junction of a PNP transistor, the P-terminal is connected to positive voltage, and the N-terminal is connected to negative voltage.

B). For the collector junction of an NPN transistor, the P-terminal is connected to positive voltage, and the N-terminal is connected to negative voltage.

C). For the emitter junction of an NPN transistor, the P-terminal is connected to positive voltage, and the N-terminal is connected to negative voltage.

D). For the collector junction of a PNP transistor, the N-terminal is connected to positive voltage, and the P-terminal is connected to negative voltage.

Correct Answer: B

Q.5 In a non-inverting op-amp, if the feedback resistance is 20 K Ω and resistance between input and inverting terminal is 4 K Ω , the value of voltage gain is _____.

Ans A). 0.2 B). 1.2 C). 5 D). 6

Correct Answer: D

Q.6 Which of the following describes the effect of hardening in conducting materials such as copper and aluminium?

Ans A). It increases ductility and reduces resistance.

B). It reduces electrical conductivity and increases brittleness.

C). It has no effect on the material's electrical properties.

D). It increases hardness and tensile strength, but reduces ductility.

Correct Answer: B

Q.7 In 8051 microcontroller, Special Function Registers can be addressed using addresses from _____.

Ans A). 00h - 7Fh B). 80h - FFh C). F0h - FFh D). 20h - 2Fh

Correct Answer: B

Q.8 The roll-off factor (β :beta) in raised cosine filter represents the ratio of:

Ans A). excess power of system to the minimum Nyquist bandwidth

B). additional bandwidth to total system bandwidth

C). total available bandwidth to the Nyquist bandwidth

D). excess bandwidth to the Nyquist bandwidth

Correct Answer: D

Q.9 The IC 723 is primarily used as a _____.

Ans A). clamper B). clipper C). rectifier D). voltage regulator

Correct Answer: D

Q.10 In Frequency Shift Keying (FSK) modulation, the carrier frequency is switched between two frequencies based on _____.

Ans A). amplitude variation B). whether a binary 1 or 0 is sent C). phase variation D). frequency variation

Correct Answer: B

Q.11 What is the hexadecimal equivalent of the binary number 110101?

Ans A). 2B B). 38 C). 6A D). 35

Correct Answer: D

Q.12 What is the limitation of the conditional operator (? :) in C?

Ans A). It cannot be nested.

B). It can only be used with integer values.

C). It allows only one statement after ? and :.

D). It cannot be used inside a loop.

Correct Answer: C

Q.13 Why does magnetic fringing occur at the ends of a magnetic circuit?

Ans A). The magnetic poles are not well-defined.

B). The reluctance of the material increases.

C). The MMF is not constant.

D). The magnetic field lines spread out and become weaker.

Correct Answer: D

Q.14 A half-wave rectifier is designed using a diode and a resistor. The diode will burn out if it remains ON for more than 10 μ s. What is the minimum input frequency required for safe operation?

Ans A). 1 MHz B). 20 kHz C). 100 kHz D). 50 kHz

Correct Answer: D

Q.15	In a magnetic circuit, the total magnetic flux is 2 Wb (Weber). The reluctance of the magnetic circuit is 5 AT/Wb. What is the magnetomotive force (MMF) required to establish this flux?				
Ans A).	14 A	B). 10 AT	C). 12 A	D). 1 A	Correct Answer: B
Q.16	Which of the following devices operates at the Data Link Layer of the OSI model?				
Ans A).	Switch	B). Modem	C). Firewall	D). Router	Correct Answer: A
Q.17	The ternary operator can be used as a replacement for which loop/statement?				
Ans A).	If-else statement	B). For loop	C). While loop	D). Switch-case statement	Correct Answer: A
Q.18	In an electrical circuit, there are two resistors ($R_1 = 5\ \Omega$ and $R_2 = 10\ \Omega$) connected in series with a 15 V battery. What is the voltage drop across R_2 , according to Kirchhoff's Voltage Law (KVL)?				
Ans A).	5 V	B). 15 V	C). 0 V	D). 10 V	Correct Answer: D
Q.19	A BJT is configured as a common-base amplifier; which of the following statements is INCORRECT?				
Ans A).	It is suitable for high-frequency applications.				Correct Answer: C
	B). The voltage gain in a CB configuration is very high.				
	C). The CB configuration operates as an amplifier when the transistor is in the saturation region.				
	D). It works as an off switch if both junctions are reverse biased.				
Q.20	Which of the following is a characteristic of diamagnetic materials when placed in a magnetic field?				
Ans A).	They are strongly magnetised in the same direction as the applied magnetic field.				Correct Answer: C
	B). They exhibit no effect in a magnetic field.				
	C). They exhibit weak repulsion from the magnetic field and align in the opposite direction.				
	D). They exhibit a strong attraction to the magnetic field.				
Q.21	Which of the following is a major application of carbon in electrical engineering?				
Ans A).	Semiconductor components in circuits				Correct Answer: B
	B). Electrical contacts and brushes in motors				
	C). Conducting wires for power transmission				
	D). Insulating material for high-voltage cables				
Q.22	The address range of the bit addressable memory area in the 8051 microcontroller is _____.				
Ans A).	00-FFh	B). 00-7Fh	C). 20-2Fh	D). 20-7Fh	Correct Answer: C
Q.23	Which SNMP component resides on the network device being monitored?				
Ans A).	Protocol Analyzer	B). SNMP Agent	C). MIB Server	D). SNMP Manager	Correct Answer: B
Q.24	Capture range frequency of a PLL _____.				
Ans A).	is inversely proportional to the square root value of capacitance				Correct Answer: A
	B). is directly proportional to the value of capacitance				
	C). is inversely proportional to the value of capacitance				
	D). does not depend on the value of capacitance				
Q.25	What does DSB-SC stand for in communication system engineering?				
Ans A).	Double Sideband with Single Carrier				Correct Answer: B
	B). Double Sideband Suppressed Carrier				
	C). Dual Sideband with Single Carrier				
	D). Dependent Sideband Suppressed Carrier				
Q.26	The Port _____ in the 8051 microcontroller has no dual functions.				
Ans A).	1	B). 2	C). 3	D). 0	Correct Answer: A
Q.27	Which of the following functions is used to find the length of a string in C?				
Ans A).	sizeof()	B). strlen()	C). length()	D). strlench()	Correct Answer: B

Q.28 Why is a delay line used in an oscilloscope?

- Ans A). To reduce noise in the signal B). To enhance signal resolution C). To increase signal amplitude
D). To synchronise the input signal with the electron beam

Correct Answer: D

Q.29 What does the 'D' in DRAM stand for?

- Ans A). Dynamic B). Direct C). Data D). Digital

Correct Answer: A

Q.30 In a PNP transistor, when the emitter junction is forward biased and the collector junction is reverse biased, which of the following statements is correct?

- Ans A). In a PNP transistor, current mainly flows due to electrons in the N-type base.
B). The depletion width of the N-type base is smaller than that of the P-type collector.
C). The collector current is the sum of the majority and minority currents.
D). The depletion region of the emitter junction increases as the applied voltage increases.

Correct Answer: C

Q.31 What is a primary application of VSB (Vestigial Sideband) modulation?

- Ans A). Telephonic communication B). Television signal transmission C). FM radio broadcasting D). Satellite communication

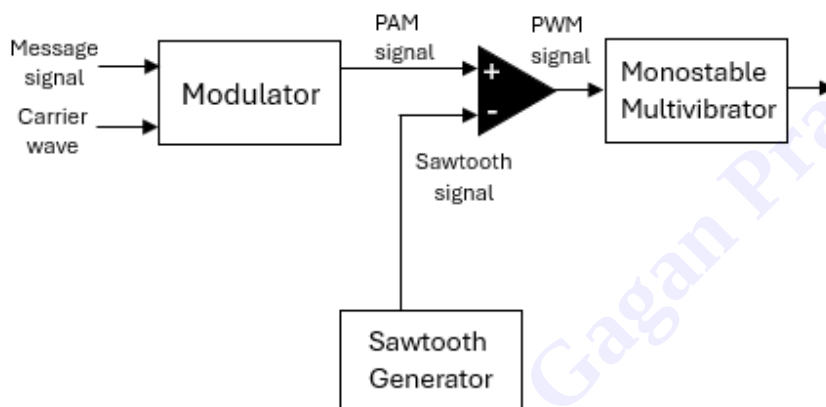
Correct Answer: B

Q.32 How many select lines are required for a 1-to-8 Demultiplexer?

- Ans A). 4 B). 1 C). 2 D). 3

Correct Answer: D

Q.33 The following block diagram represents which type of signal generation in communication?



- Ans A). PWM B). PAM C). PCM D). PPM

Correct Answer: D

Q.34 In a multiple trace oscilloscope, the display of two signals is achieved by:

- Ans A). using multiple phosphor screens B). using a digital display panel C). using two electron guns
D). using a single electron gun with alternating sweeps

Correct Answer: D

Q.35 Which of the following statements is FALSE for a negative feedback amplifier?

- Ans A). It reduces nonlinear distortion in the output of the circuit. B). It reduces the effect of temperature on the output.
C). It reduces unwanted electrical signals at the output generated in the circuit. D). It reduces the bandwidth of the amplifier.

Correct Answer: D

Q.36 Which of the following is a characteristic of a primary cell?

- Ans A). Once discharged, it cannot be reused. B). It can be recharged multiple times. C). It is used in rechargeable applications.
D). It has a longer shelf life compared to secondary cells.

Correct Answer: A

Q.37 What is the primary function of a voltage differential relay in an electrical protection system?

- Ans A). It detects phase angle differences between the currents and trips the system if the angle exceeds a set limit.
B). It measures the impedance across the circuit and operates when a fault is detected.
C). It compares the current entering and leaving the protected zone to detect faults.
D). It detects the difference in voltage between two or more points and trips the system if the voltage difference exceeds a set threshold.

Correct Answer: D

Q.38 How many clock pulses are required to load n bits into an n -bit SIPO shift register?

- Ans A). n^2 B). $2n$ C). n D). 2^n

Correct Answer: C

Q.39 Which of the following statements is **INCORRECT** for a common-emitter (CE) BJT amplifier?

- Ans A). The CE amplifier cannot be used as a small signal amplifier.
B). The input characteristics are drawn between input current (I_B) and input voltage (V_{BE}) at constant V_{CE} .
C). It has the moderate input impedance and moderate output impedance.
D). The output characteristics are drawn between output current (I_C) and output voltage (V_{CE}) at constant input current.

Correct Answer: A

Q.40 Thermistors are favoured over other temperature transducers because they ____.

- Ans A). have a fast response time and high sensitivity B). are highly linear over a wide range C). have a wide temperature range
D). are not affected by environmental conditions

Correct Answer: A

Q.41 What is the difference between edge-triggering and level-triggering?

- Ans A). Edge-triggering responds to the transition of the clock, while level-triggering responds to the level of the clock.
B). Edge-triggering requires more power than level-triggering. C). Edge-triggering is faster than level-triggering.
D). Edge-triggering responds to the level of the input, while level-triggering responds to the transition.

Correct Answer: A

Q.42 What is a 'memory bank' in RAM organisation?

- Ans A). A cache memory location B). A group of memory cells arranged in a single row
C). A section of memory reserved for the operating system D). An independent memory module that can be accessed concurrently

Correct Answer: D

Q.43 Which topology is most suitable for small networks or temporary setups?

- Ans A). Star topology B). Ring topology C). Mesh topology D). Bus topology

Correct Answer: D

Q.44 A practical silicon diode with a cut-in voltage of 0.7 V is connected as follows:

P-terminal (anode) $\rightarrow$ Ground (0V)

N-terminal (cathode) $\rightarrow$ +10V

Given that the current flowing through the diode is 1 μ A, what is the DC resistance in reverse biased diode?

- Ans A). 10.7 M Ω B). -9.30 M Ω C). 9.30 M Ω D). 10 M Ω

Correct Answer: D

Q.45 In PLL as frequency synthesizer, if the crystal oscillator having frequency 500 MHz is passed through divide by 2 network, then the input frequency to PLL is _____ MHz.

- Ans A). 1000 B). 250 C). 1500 D). 0.004

Correct Answer: B

Q.46 Which of the following is true about microwaves in unguided media?

- Ans A). They are slower than radio waves. B). They require line-of-sight transmission.
C). They are not affected by obstacles like buildings or hills. D). They use fiber optics for data transmission.

Correct Answer: B

Q.47 What is the purpose of the sizeof operator in C?

- Ans A). To allocate memory at compile time B). To allocate memory dynamically C). To determine the size of a data type or variable in bytes
D). To determine the size of a data type or variable in bits

Correct Answer: C

Q.48 In a CRT oscilloscope, the horizontal deflection plates are used to:

Ans A). focus the beam on the phosphor screen B). create a sweeping movement of the beam from left to right C). control the electron gun
D). display the vertical signal **Correct Answer: B**

Q.49 Which of the following instruments typically has the highest resolution?

Ans A). Digital multimeter B). Oscilloscope C). Digital thermometer D). Analog voltmeter **Correct Answer: A**

Q.50 The time delay in an oscilloscope can be measured by:

Ans A). measuring the time between two successive peaks of the signal B). measuring the amplitude of the signal
C). counting the number of weak signals D). measuring the decibel of the signal **Correct Answer: A**

Q.51 Why is shielding used in oscilloscope probes?

Ans A). To control the electron beam in the oscilloscope B). To reduce external electromagnetic interference
C). To increase the probe's sensitivity D). To amplify weak signals **Correct Answer: B**

Q.52 Selectivity in a protection relay system refers to:

Ans A). the ability of the relay to operate only for specific fault types
B). the ability of the relay to discriminate between fault and normal conditions
C). the ability of the relay to clear faults without affecting the rest of the system
D). the ability of the relay to operate with a minimal time delay for all fault conditions **Correct Answer: C**

Q.53 Which of the following statements about FM detection using PLL circuit are correct?

S1: At the error amplifier output, we get demodulated FM output.
S2: FM signal is applied to the input of the PLL.

Ans A). Only S1 B). Neither S1 nor S2 C). Only S2 D). Both S1 and S2 **Correct Answer: D**

Q.54 What is a key difference between a modem and a network interface card (NIC)?

Ans A). A modem provides internet access, while a NIC manages local area network (LAN) traffic.
B). A NIC connects to wireless networks, while a modem only supports wired connections.
C). A NIC is used to modulate signals, while a modem is used to demodulate signals.
D). A modem connects to the network, while a NIC connects individual devices. **Correct Answer: A**

Q.55 What is another name for PWM in communication engineering?

Ans A). Pulse Amplitude Modulation (PAM) B). Pulse Code Modulation (PCM) C). Pulse Duration Modulation (PDM)
D). Pulse Position Modulation (PPM) **Correct Answer: C**

Q.56 In a priority encoder, what happens when two or more input lines are active at the same time?

Ans A). The encoder will output the binary code for the lowest priority active input. B). The encoder will output an error.
C). The encoder will output the binary code for the highest priority active input.
D). The encoder will output the binary code for both the priority active inputs. **Correct Answer: C**

Q.57 Dielectric strength is an important property of insulating materials. Which of the following best describes the dielectric strength of a material?

Ans A). The electrical conductivity of a material under stress
B). The maximum voltage a dielectric material can withstand without breaking down
C). The amount of heat a material can tolerate before melting D). The resistance of a material to thermal expansion **Correct Answer: B**

Q.58 Which operator is used for bitwise OR in C?

Ans A). ~ B). && C). | D). || **Correct Answer: C**

Q.59 Which combination of symbols represents an XOR (Exclusive-OR) gate?

Ans A). An OR gate with a bubble at the output. B). An AND gate with an additional curved at the input end.
C). An AND gate with a bubble at the output D). An OR gate with an additional curve at the input end. **Correct Answer: D**

Q.60	Which of the following materials is typically preferred for electrical conductors due to its high conductivity and resistance to corrosion?			
Ans A).	Manganin	B). Gold	C). Steel	D). Copper
	Correct Answer: D			
Q.61	Analyse the given program for 8085 and answer the question that follows.			
	MVI B, 06h MVI A, F2H ADD B			
	What is the content of Accumulator Register after the execution of the given program?			
Ans A).	F8h	B). 6Bh	C). 6Ah	D). F0h
	Correct Answer: A			
Q.62	There are _____ register banks in the 8051 microcontroller.			
Ans A).	three	B). four	C). six	D). two
	Correct Answer: B			
Q.63	In the internal circuit diagram of an IC 741 Op-amp, the second stage is also known as _____.			
Ans A).	intermediate stage	B). input stage	C). level shifting stage	D). output stage
	Correct Answer: A			
Q.64	Which application commonly uses mineral insulating materials due to their mechanical strength and electrical insulating properties?			
Ans A).	Batteries and electrodes	B). Electrical insulators for high-voltage transmission lines	C). Electrical wires for household use	D). Low-voltage electronic devices
	Correct Answer: B			
Q.65	What determines the length of the delay in an electrical delay line used in oscilloscopes?			
Ans A).	The propagation speed of the signal in the line	B). The resistance of the delay line	C). The frequency of the input signal	D). The speed of the electron beam
	Correct Answer: A			
Q.66	Which of the following statements about rectifiers is INCORRECT?			
Ans A).	The transformer utilization factor (TUF) is equal for both the bridge and center-tapped rectifier.			
B).	Each half of the secondary winding of a center-tapped transformer is utilised for only half the time.			
C).	The transformer utilization factor (TUF) is higher for a full-wave rectifier compared to a half-wave rectifier.			
D).	The transformer utilization factor (TUF) is better for a bridge rectifier compared to a center-tapped rectifier.			
	Correct Answer: A			
Q.67	What is the Boolean expression for the Carry-out (C) output of a Half Adder?			
Ans A).	$C = A \oplus B$	B). $C = A \text{ OR } B$	C). $C = A \text{ AND } B \oplus C_{in}$	D). $C = A \text{ AND } B$
	Correct Answer: D			
Q.68	Which of the following statements about a bipolar junction transistor (BJT) is correct?			
Ans A).	$I_E = [I_C/\beta] + \beta I_B$			
B).	Collector current is the sum of emitter current and base current.			
C).	If β is the common emitter amplifier current gain, then $I_C = \beta I_E$.			
D).	The current gain in common base amplifier is the ratio of collector current to base current.			
	Correct Answer: A			
Q.69	A half-wave rectifier is designed using a transformer and a diode. The primary winding of the transformer, with N_1 turns, is connected to a $240 \sin(\omega t)$ V supply. The secondary winding has N_2 turns. What is the rectified DC output voltage (V_{dc}) if $N_1/N_2 = 1 : 1$?			
Ans A).	240π	B). $240/\pi$	C). 240	D). $480/\pi$
	Correct Answer: B			
Q.70	A positive edge-triggered T Flip-Flop has T = 1. If the current output Q is 0, what will be the output Q after 3 clock pulses?			
Ans A).	0	B). Unchanged	C). 1	D). Toggles
	Correct Answer: C			
Q.71	In which modulation technique is the carrier modulated using phase shifts of 0°, 90°, 180°, and 270°?			
Ans A).	QPSK (Quadrature Phase Shift Keying)	B). ASK (Amplitude Shift Keying)	C). BPSK (Binary Phase Shift Keying)	D). FSK (Frequency Shift Keying)
	Correct Answer: A			

Q.72 What is the 2's complement of the binary number 101110?

Ans A). 010011

B). 010010

C). 110001

D). 010001

Correct Answer: B

Q.73 Which of the following is NOT true about Unshielded Twisted Pair (UTP) cables?

Ans A). They have a higher resistance to EMI than STP cables.

B). They are commonly used in local area networks (LANs).

C). They are lighter and more flexible than STP cables.

D). They are cost-effective for short-distance communication.

Correct Answer: A

Q.74 What is the output of a EX-OR gate when both inputs are '1'?

Ans A). Undefined

B). Z

C). 1

D). 0

Correct Answer: D

Q.75 What is the region around a magnet where the magnetic force is experienced known as?

Ans A). Magnetic field

B). Magnetic flux

C). Magnetic domain

D). Magnetic pole

Correct Answer: A

Q.76 In which topology does a failure in one node NOT affect the entire network?

Ans A). Ring topology

B). Fully connected mesh topology

C). Star topology

D). Bus topology

Correct Answer: C

Q.77 _____ interrupt is a positive edge sensitive interrupt and can be triggered with a short pulse.

Ans A). RST 6.5

B). RST 7.5

C). RST 5.5

D). RST 4.5

Correct Answer: B

Q.78 Which of the following statements is correct when comparing a bridge rectifier to a centre-tapped full-wave rectifier?

Ans A). The PIV of both rectifiers is the same.

B). The transformer utilisation factor is the same for both circuits.

C). A bridge rectifier has double the peak inverse voltage (PIV) compared to a centre-tapped rectifier.

D). The transformer utilisation factor (TUF) is better for a bridge rectifier than for a centre-tapped rectifier.

Correct Answer: D

Q.79 In an asynchronous counter, the clock input of each flip-flop except first flip-flop is connected to:

Ans A). the same clock source

B). the output of the previous flip-flop

C). a separate clock source

D). a common reset line

Correct Answer: B

Q.80 If a C program contains only one function, it must be _____.

Ans A). primary()

B). void()

C). major()

D). main()

Correct Answer: D

Q.81 In a 3-to-8 decoder, how many outputs are active for any given input?

Ans A). 2

B). 8

C). 3

D). 1

Correct Answer: D

Q.82 Which of the following is NOT a commonly used pulse-shaping filter in communication systems?

Ans A). Raised cosine filter

B). Sinc filter

C). Gaussian filter

D). High-pass filter

Correct Answer: D

Q.83 In a 100% modulated AM signal with a carrier power of 100 W, what is the power in the lower sideband?

Ans A). 50 W

B). 25 W

C). 15 W

D). 150 W

Correct Answer: B

Q.84 A Colpitts oscillator is designed as a radio frequency oscillator. Which of the following statements is INCORRECT?

Ans A). It operates on the principle of parallel resonance.

B). In a Colpitts oscillator, two capacitors and an inductor form the feedback network.

C). The frequency of oscillation is $\omega = \frac{1}{\sqrt{L\left(\frac{C_1+C_2}{C_1C_2}\right)}}$

D). An LC network is used in the design of Colpitts oscillators.

Correct Answer: C

Q.85 The Fourier Transform of an real and even function results in:

- Ans A). a purely real and odd function B). a purely imaginary and even function C). an imaginary and odd function
D). a purely real and even function

Correct Answer: D

Q.86 In an n-type semiconductor, which of the following is true regarding the majority charge carriers?

- Ans A). The majority charge carriers are electrons. B). The semiconductor contains an equal number of electrons and holes.
C). The majority charge carriers are holes. D). The majority charge carriers are protons.

Correct Answer: A

Q.87 Which of the following statements about the AM detection using PLL circuit is/are correct?

S1: It has higher noise immunity than the conventional peak detector type AM detector.
S2: The PLL is locked to the carrier frequency of the AM signal.

- Ans A). Only S1 B). Only S2 C). Neither S1 nor S2 D). Both S1 and S2

Correct Answer: D

Q.88 An ideal diode is connected in series with a 1 kΩ load resistor and the input voltage is given as $V(t) = \sin^2(t) + \cos^2(t)$ V. What is the average output voltage across the load resistor?

- Ans A). Average voltage cannot be determined B). +1/2 V C). 0 V D). +1 V

Correct Answer: D

Q.89 Which of the following is a unary operator in C?

- Ans A). -- B). + C). * D). %

Correct Answer: A

Q.90 Which of the following statements about oscillator circuits is FALSE?

- Ans A). A circuit that generates a sine wave without any input is called a linear oscillator.
B). A circuit that generates a non-sinusoidal wave without any input is called a linear oscillator.
C). The frequency of an oscillator depends on the RC or LC network. D). Multivibrators are used for generating non-sinusoidal waveforms.

Correct Answer: B

Q.91 How does the SNMP Agent communicate with the SNMP Manager?

- Ans A). By generating encrypted data streams B). By responding to GET and SET requests from the SNMP Manager
C). By initiating a TCP connection D). By sending files via FTP

Correct Answer: B

Q.92 Which of the following is the syntax of the conditional operator in C?

- Ans A). expression1 ? expression2 : expression3 B). expression || expression1 && expression2 C). condition1 : expression1 ? expression2
D). condition1 && expression1 || expression2

Correct Answer: C

Q.93 Which of the following components is required to detect (demodulate) Pulse Position Modulation (PPM)?

- a) Pulse Generator
b) RS Flip-Flop
c) PWM Demodulator

- Ans A). Only a B). All a, b, and c C). Only c D). Only a and b

Correct Answer: B

Q.94 In a magnetic circuit, if the reluctance of a path increases, which of the following occurs?

- Ans A). The magnetomotive force (MMF) will increase. B). The magnetic flux will increase. C). The magnetic flux will decrease.
D). The resistance to magnetic flux will decrease.

Correct Answer: C

Q.95 Which of the following characteristics is associated with a distance relay used for fault protection?

- Ans A). It operates based on the impedance between the relay and the fault. B). It is used only for short-circuit protection.
C). It operates based on the current only. D). It operates based on the voltage at the fault location.

Correct Answer: A

Q.96 In a Nickel-Iron cell, which of the following best describes the working principle during the discharging process?

- Ans A). Nickel at the positive electrode is reduced to metallic nickel, and iron hydroxide at the negative electrode is oxidised.
B). Iron at the negative electrode is oxidised to iron oxide, and nickel at the positive electrode is reduced to nickel hydroxide.
C). Nickel hydroxide at the positive electrode is reduced to metallic nickel, and iron is oxidised at the negative electrode.
D). Iron at the negative electrode is reduced to metallic iron, and nickel hydroxide at the positive electrode is oxidised.

Correct Answer: B

Q.97 In an op-amp integrator circuit, the output voltage is proportional to the _____.

- Ans A). cube of the input signal B). sum of the input signal C). integral of the input signal D). derivative of the input signal

Correct Answer: C

Q.98 The DMA sends DACK - acknowledgement signal to the peripheral when _____.

- Ans A). higher address bus A8- A15 is available on the address bus B). MPU sends the HLDA signal
C). entire address bus A0- A15 is available on the address bus D). lower address bus A0- A7 is available on the address bus

Correct Answer: B

Q.99 Which of the following factors is primarily used to determine the rating of a resistor?

- Ans A). Material used for construction B). Power dissipation capacity C). Temperature coefficient D). Colour code

Correct Answer: B

Q.100 What is the output of the following code?

```
int i = 1 ;  
while ( i <= 10 )  
printf ( "%d\n", i );
```

- Ans A). 10 9 8 7 6 5 4 3 2 1 B). 1 2 3 4 5 6 7 8 9 10 C). 0 1 2 3 4 5 6 7 8 9 D). Infinite loop

Correct Answer: D



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Chemical and Metallurgical Supervisor

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?

Ans A). 2015 B). 2005 C). 2008 D). 2014

Correct Answer: A

Q.2 The phenomenon of multiple echoes due to repeated reflections is called _____.

Ans A). diffraction B). refraction C). resonance D). reverberation

Correct Answer: D

Q.3 What is the purpose of the Collation option in the Print settings?

Ans A). To adjust the page orientation B). To select a custom print range C). To change the printer selection
D). To print all the pages of a document as a set

Correct Answer: D

Q.4 What was the main objective of the Extremists during the Indian National Movement?

Ans A). To expand the legislative councils B). To attain complete independence (Swaraj) C). To bring social reforms
D). To promote British goods in India

Correct Answer: B

Q.5 What is the net force acting on an object if balanced forces are applied?

Ans A). Equal to the mass of the object B). Zero C). Equal to acceleration D). Infinite

Correct Answer: B

Q.6 Which of the following correctly explains why clothes dry faster on a windy day?

Ans A). Wind increases the humidity around the clothes. B). Wind removes the water vapour from the clothes' surroundings.
C). Wind decreases the temperature of the water molecules. D). Wind reduces the surface area of the clothes.

Correct Answer: B

Q.7 Which of the following is NOT a source of release of smokestacks?

Ans A). Smelters B). Rivers C). Thermal power plants D). Industries

Correct Answer: B

Q.8 What is the approximate pH of a neutral salt solution?

Ans A). Depends on the temperature B). Equal to 7 C). Less than 7 D). More than 7

Correct Answer: B

Q.9 The main use of chlorofluorocarbons is in _____.

Ans A). vehicles B). chimneys C). smog D). refrigerants

Correct Answer: D

Q.10	The energy that is derived from the use of radioactive isotopes is termed as _____.			
Ans	A). nuclear energy	B). solar energy	C). thermal energy	D). geothermal energy
Correct Answer: A				
Q.11	Why does a bee sting cause pain and irritation?			
Ans	A). The sting contains a strong base.	B). The sting injects a mild sugar solution.	C). The sting releases carbon dioxide gas.	D). The sting injects methanoic acid.
Correct Answer: D				
Q.12	The practice of Jhum cultivation is prevalent in the _____.			
Ans	A). North west	B). South west	C). North east	D). South east
Correct Answer: C				
Q.13	In which of the following regions the Himalayas has the greatest width?			
Ans	A). Sikkim	B). Kashmir	C). Arunachal Pradesh	D). Himachal Pradesh
Correct Answer: B				
Q.14	If an object is dropped from rest, what will be its velocity after 15 seconds? (g = 9.8 m/s ²)			
Ans	A). 143 m/s	B). 149 m/s	C). 145 m/s	D). 147 m/s
Correct Answer: D				
Q.15	Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?			
Ans	A). Al ₃ (SO ₄) ₂	B). Al(SO ₄) ₃	C). Al ₂ (SO ₄) ₃	D). Al ₂ SO ₄
Correct Answer: C				
Q.16	Which official in the Gupta administration was responsible for peace and war matters?			
Ans	A). Sandhi-Vigrahika	B). Mahapratihara	C). Vishayapati	D). Mahadandanayaka
Correct Answer: A				
Q.17	What happens when a computer is put into Sleep mode?			
Ans	A). It keeps the session active in RAM while using minimal power.	B). It restarts automatically after a few minutes.	C). It shuts down completely.	D). It stores data on the hard drive and powers off.
Correct Answer: A				
Q.18	The Rudra Veena is predominantly associated with which genre of Hindustani music?			
Ans	A). Khayal	B). Thumri	C). Ghazal	D). Dhrupad
Correct Answer: D				
Q.19	Inertia depends on which property of an object?			
Ans	A). Velocity	B). Mass	C). Shape	D). Acceleration
Correct Answer: B				
Q.20	Which of the following is NOT a component of a CPU?			
Ans	A). Arithmetic Logic Unit (ALU)	B). Control Unit (CU)	C). Cache Memory	D). Hard Disk
Correct Answer: D				
Q.21	The Industrial Policy Resolution of 1956 categorised industries into how many groups?			
Ans	A). Three	B). Nine	C). Five	D). Seven
Correct Answer: A				
Q.22	The glass panel used in greenhouses is known to retain _____.			
Ans	A). pH	B). humidity	C). rainfall	D). heat
Correct Answer: D				
Q.23	Who among the following inaugurated the 38 th National Games held in Dehradun in January 2025?			
Ans	A). Pushkar Singh Dhami	B). Narendra Modi	C). Droupadi Murmu	D). Anurag Thakur
Correct Answer: B				
Q.24	What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?			
Ans	A). Refreshes the worksheet	B). Repeats the last action	C). Opens the Find and Replace dialog	D). Toggles between absolute and relative references
Correct Answer: D				
Q.25	What is the first step to securing ones smartphone or tablet?			
Ans	A). Turning off mobile data	B). Installing more apps	C). Setting a password/PIN-protected lock screen	D). Using only free Wi-Fi networks
Correct Answer: C				

Q.26 Which of the following is a characteristic difference between colloids and true solutions? Ans A). True solutions show the Tyndall effect, but colloids do not. B). True solutions have visible solute particles, whereas colloids have invisible dispersed particles. C). True solutions exhibit Brownian motion, but colloids do not. D). True solutions have a single-phase system, whereas colloids have a two-phase system. Correct Answer: D
Q.27 Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025? Ans A). Mumbai B). Chennai C). New Delhi D). Kolkata Correct Answer: C
Q.28 Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights? Ans A). Article 88 B). Article 53 C). Article 77 D). Article 78 Correct Answer: A
Q.29 If the absolute refractive index of a medium is less than 1, it means _____. Ans A). the medium absorbs all light B). light travels slower in that medium than in vacuum C). light travels faster in that medium than in vacuum D). the medium is a perfect reflector Correct Answer: C
Q.30 The fine powder that is obtained from the modified and recycled form of plastic is called _____. Ans A). polyethylene B). polystyrene C). polyblend D). polythene Correct Answer: C
Q.31 Which defect of vision occurs due to the weakening of ciliary muscles with age? Ans A). Astigmatism B). Myopia C). Hypermetropia D). Presbyopia Correct Answer: D
Q.32 Which of the following is NOT toxic to non-target organisms in the soil? Ans A). Organic fertilisers B). Pesticides C). Fungicides D). Herbicides Correct Answer: A
Q.33 What does PCB stand for? Ans A). Printed Circuit Board B). Peripheral Connection Bus C). Primary Control Board D). Processing Circuit Board Correct Answer: A
Q.34 The maximum sound is generated _____. Ans A). from house chimneys B). from industrial smoke C). from vehicular emissions D). by the take off of a jet plane Correct Answer: D
Q.35 Which of the following states is NOT covered under the Atal Bhujal Yojana? Ans A). Uttar Pradesh B). Rajasthan C). Jharkhand D). Maharashtra Correct Answer: C
Q.36 According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12? Ans A). 25.7% B). 20% C). 27.5% D). 15.5% Correct Answer: A
Q.37 What is India's global military ranking in the 2025 Global Firepower (GFP) index? Ans A). 3rd B). 2nd C). 4th D). 5th Correct Answer: C
Q.38 If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field. Ans A). To B). Bcc C). Subject D). Cc Correct Answer: D
Q.39 Which state of matter shows the highest expansion when temperature is increased? Ans A). Plasma B). Liquids C). Solids D). Gases Correct Answer: D
Q.40 Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India? Ans A). Google B). Meta C). Microsoft D). Amazon Correct Answer: B

Q.41 What happens when an acid reacts with a metal oxide?

Ans A). A salt and water are formed. B). Only water is formed. C). A salt and hydrogen gas are formed. D). Only salt is formed.

Correct Answer: A

Q.42 What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91st Amendment Act?

Ans A). 10% of Lok Sabha strength B). 15% of Lok Sabha strength C). 20% of Lok Sabha strength D). 12% of Lok Sabha strength

Correct Answer: B

Q.43 Which of the following CANNOT be considered as a measure to control global warming?

Ans A). Cutting down use of fossil fuel B). Efficiently using energy C). Reduction in emission of greenhouse gases D). Causing deforestation

Correct Answer: D

Q.44 Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?

Ans A). Preamble B). Directive Principles of State Policy C). Fundamental Duties D). Fundamental Rights

Correct Answer: B

Q.45 What is the shortcut key to start a slideshow from the beginning?

Ans A). F5 B). Ctrl + P C). Alt + Tab D). Shift + F5

Correct Answer: A

Q.46 What is the primary purpose of using a firewall on a Personal Computer?

Ans A). To increase storage space B). To speed up internet connectivity C). To clean up temporary files
D). To block unauthorised access and protect the computer

Correct Answer: D

Q.47 Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.

Ans A). MgPO_4 B). $\text{Mg}_3(\text{PO}_4)_2$ C). $\text{Mg}_2(\text{PO}_4)_3$ D). $\text{Mg}(\text{PO}_4)_3$

Correct Answer: B

Q.48 In an electric circuit, what is the correct way to connect an ammeter?

Ans A). In series with the component B). In parallel with the component C). In parallel with the source D). In either series or parallel

Correct Answer: A

Q.49 The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.

Ans A). phosphate B). nitrate C). bacterium D). chloride

Correct Answer: C

Q.50 Which of the following is the correct way to insert a new column in a spreadsheet?

Ans A). Go to File > New > Column. B). Go to Home > Insert > Insert Sheet Columns. C). Press Ctrl + X and then Insert.
D). Use Ctrl + Z to insert a column.

Correct Answer: B

Q.1 What is a significant environmental concern associated with using non-renewable energy sources?

Ans A). Water scarcity B). Habitat destruction C). Greenhouse gas emissions D). Overpopulation

Correct Answer: C

Q.2 Which of the following is a common industrial method for preparing ammonium nitrate?

Ans A). Haber-Bosch process B). Electrolysis of ammonium salts C). Metathesis reaction D). Neutralisation of ammonia with nitric acid

Correct Answer: D

Q.3 Which of the following is an INCORRECT statement about hard water?

Ans A). Hard water contains dissolved calcium and magnesium salts B). Hard water lowers the boiling point of water
C). Hard water does not lather well with soap and forms white scum D). Hard water decreases the cleansing ability of soap

Correct Answer: B

Q.4 Which of the following queries will correctly retrieve the name of Professor from Professor table with ID 101, 102 or 104?

Ans A). SELECT NAME FROM Professor WHERE id CONTAINS (101, 102, 103);

B). SELECT NAME FROM Professor WHERE id BETWEEN 101 AND 103;

C). SELECT NAME FROM Professor WHERE id IN (101, 102, 104); D). SELECT NAME FROM Professor WHERE id = (101, 102, 103);

Correct Answer: C

Q.5 Which of the following types of coke ovens are heated from outside and the heat required for carbonisation is transmitted through the side walls?

Ans A). Beehive ovens B). Flatter and wider ovens C). Non recovery ovens D). Slot type by-product recovery ovens

Correct Answer: D

Q.6 What is the primary use of gasoline as a petroleum product?

Ans A). Manufacturing plastics B). Lubricating machinery C). Heating homes D). Powering internal combustion engines

Correct Answer: D

Q.7 What is the primary combustible component of producer gas?

Ans A). Nitrogen B). Carbon monoxide C). Hydrogen D). Carbon dioxide

Correct Answer: B

Q.8 Arrange the following materials in descending order, as per the value of their thermal conductivity.

- 1) Pure iron
- 2) Liquid water
- 3) Steam
- 4) Pure Brass

Ans A). 4-3-2-1 B). 4-1-2-3 C). 2-3-1-4 D). 1-2-3-4

Correct Answer: B

Q.9 Which of the following factors favours high thermal stability of coke in the blast furnace?

Ans A). High chemical reactivity B). Absence of large lumps in feed coke C). Low carbonisation temperature
D). Maximum inert inclusions of large sizes

Correct Answer: B

Q.10 What will be the output of the following C code?

```
#include <stdio.h>
void main()
{
    int x = 10, y = 20;
    printf("%d",!(x < y) ? ++x : y);
}
```

Ans A). 20 B). 10 C). 30 D). 11

Correct Answer: A

Q.11 Which of the following ceramics has a two-layer silicate sheet structure?

Ans A). Silica glass B). Kaolinite clay C). Silica D). Fullerene

Correct Answer: B

Q.12 Which of the following is the chemical name of natural rubber?

Ans A). Chloroprene B). Acrylonitrile-butadiene copolymer C). Styrene-butadiene copolymer D). Polyisoprene

Correct Answer: D

Q.13 Select the correct pair related to types of doors and their features.

Ans A). Collapsible door - Made of PVC panels B). Revolving door - Made of shutter slide on sides with help of runners and guided rails
C). Battened and ledged door - Made of vertical bond and horizontal supports D). Flush door - Made of single wood plank

Correct Answer: C

Q.14 The mass density of water is ____ in the standard conditions.

Ans A). 1000 kg/m³ B). 10 kg/m³ C). 1 kg/m³ D). 100 kg/m³

Correct Answer: A

Q.15 Which of the following options correctly identifies Data Control Language (DCL) commands in SQL Query?

Ans A). CREATE, DROP B). GRANT, REVOKE C). SELECT, INSERT D). UPDATE, DELETE

Correct Answer: B

Q.16 A surveyor is conducting a compass survey between two stations, A and B. The observed fore bearing (FB) of line AB is $124^{\circ}30'$. Determine the back bearing (BB) of line BA, considering there is no local attraction. Ans A). $94^{\circ}30'$ B). $234^{\circ}30'$ C). $214^{\circ}30'$ D). $304^{\circ}30'$ Correct Answer: D
Q.17 What is the primary component of LPG (liquefied petroleum gas)? Ans A). Methane B). Carbon dioxide C). Nitrogen D). Propane Correct Answer: D
Q.18 Which of the following is an example of a web hosting control panel? Ans A). Apache B). cPanel C). MySQL D). PHP Correct Answer: B
Q.19 Which of the following is NOT a part of the gating system? Ans A). Runner B). Gate C). Core D). Sprue Correct Answer: C
Q.20 In which application(s) is/are load cells commonly used? Ans A). Weighing scales and industrial force measurement B). Electromagnetic wave measurement C). Temperature measurement D). Sound level detection Correct Answer: A
Q.21 A BJT will operate in an active region if _____. Ans A). an emitter base junction is reverse biased and a collector base junction is forward biased B). an emitter base junction is forward biased and a collector base junction is forward biased C). an emitter base junction is reverse biased and a collector base junction is reverse biased D). an emitter base junction is forward biased and a collector base junction is reverse biased Correct Answer: D
Q.22 At constant pressure, volume of expansion coefficient of a substance represents the variation of _____. Ans A). viscosity with temperature B). density with temperature C). specific heat with volume D). thermal conductivity with volume Correct Answer: B
Q.23 Theoretically, If $E_b = V$ in a DC motor, the motor is likely operating at _____. Ans A). a stalled condition B). no load C). overload D). full load Correct Answer: B
Q.24 Which of the following is NOT a method of ranging used in chaining? Ans A). Optical ranging B). Reciprocal ranging C). Indirect ranging D). Direct ranging Correct Answer: A
Q.25 Which of the following characteristics is the least desirable in a building stone used for foundation construction? Ans A). High water absorption B). Good durability C). Low porosity D). High compressive strength Correct Answer: A
Q.26 Which of the following is the relation between the atomic radius, r, and the lattice parameter, a, for the BCC crystal? Ans A). $r = a$ B). $r = \frac{a}{(2\sqrt{2})}$ C). $r = \frac{(a\sqrt{3})}{4}$ D). $r = a\sqrt{2}$ Correct Answer: C
Q.27 What is a common method to reduce friction between two surfaces? Ans A). Applying a lubricant B). Roughening the surface C). Increasing the pressure D). Increasing the surface area Correct Answer: A
Q.28 Which of the following elements is primarily responsible for the corrosion resistance of stainless steel? Ans A). Molybdenum B). Nickel C). Carbon D). Chromium Correct Answer: D
Q.29 Which of the following types of electrical currents is commonly used in arc welding? Ans A). Only Alternating Current (AC) B). Only static electricity C). Both AC and DC, depending on the welding process and material D). Only Direct Current (DC) Correct Answer: C
Q.30 Which of the following operators is used to find the remainder after division? Ans A). / B). - C). + D). % Correct Answer: D

Q.31 In a Zener diode voltage regulator circuit, what is the purpose of the series resistor (R_s) connected between the input voltage source and the Zener diode?

- Ans A). To drop the excess voltage and regulate the output B). To filter out noise and ripples in the input voltage
C). To limit the current through the Zener diode D). To increase the voltage rating of the Zener diode

Correct Answer: C

Q.32 Which of the following is the main objective of primary wastewater treatment?

- Ans A). To use biological processes to break down organic matter B). To remove all bacteria and viruses from the water
C). To remove floating materials and settleable solids D). To add chemicals to disinfect the water

Correct Answer: C

Q.33 What are the two main types of junction capacitance in a PN-junction diode, based on charge storage?

- Ans A). Diffusion capacitance and transition capacitance B). Conduction capacitance and breakdown capacitance
C). Stray capacitance and conduction capacitance D). Stray capacitance and leakage capacitance

Correct Answer: A

Q.34 The stress–strain behaviour of which of the following polymeric materials shows large recoverable strains produced at low stress levels?

- Ans A). Thermosetting polymer B). Plastic polymer C). Brittle polymer D). Elastomer

Correct Answer: D

Q.35 What will be the output of the following C code?

```
#include <stdio.h>
void main()
{
    int x=10,result=0;
    if (++x > 2)
        result=x+2;
    printf("%d",result);
}
```

- Ans A). 6 B). 0 C). 13 D). 12

Correct Answer: C

Q.36 A concave mirror is used to form an image of an object. The object distance (u) is 30 cm and the image distance (v) is 15 cm. Calculate the focal length (f) of the mirror.

- Ans A). –10 cm B). –30 cm C). 10 cm D). 30 cm

Correct Answer: A

Q.37 What is NOT the unit of measurement for water hardness?

- Ans A). Milligrams of calcium carbonate per litre B). Parts per million C). Grams per gallon D). Grains per gallon

Correct Answer: C

Q.38 How does the limiting value of static friction depend on the area of contact?

- Ans A). Independent of area B). Directly proportional to $(\text{area})^2$ C). Inversely proportional to area D). Directly proportional to area

Correct Answer: A

Q.39 At what temperature does ammonium sulphate become ferroelectric?

- Ans A). 0°C B). 100°C C). 25°C D). -49.5°C

Correct Answer: D

Q.40 Which of the following polymers are linear polymers with flexible chains?

- Ans A). Phenolics B). Epoxies C). Network polymers D). Polyethylene

Correct Answer: D

Q.41 An ideal refrigeration machine has a fixed lower temperature. The COP of the machine can be increased by _____.

- Ans A). decreasing the operating speed of the machine B). increasing the higher temperature
C). increasing the operating speed of the machine D). decreasing the higher temperature

Correct Answer: D

Q.42 Which of the following transmission modes is most suitable for voice-over IP (VoIP)?

- Ans A). Simplex B). Parallel C). Half-duplex D). Full-duplex

Correct Answer: D

Q.43 What is primary function of a rectifier?

- Ans A). To regulate output signal B). To amplify the input signal C). To convert AC signal in DC signal D). To filter out unwanted frequencies

Correct Answer: C

Q.44 The Control Unit receives opcode information from the:

Ans A). Accumulator (AC) B). Program Counter (PC) C). Memory Address Register (MAR) D). Instruction Register (IR)

Correct Answer: D

Q.45 What is a significant impact of pollution on biodiversity?

Ans A). Extinction of sensitive species B). Improved soil fertility C). Enhanced aquatic ecosystems D). Increase in species diversity

Correct Answer: A

Q.46 Which property of tin makes it suitable for use in solder?

Ans A). High density B). High electrical conductivity C). Corrosion resistance D). Low melting point

Correct Answer: D

Q.47 Which property makes melamine foam suitable for soundproofing applications?

Ans A). Low thermal conductivity B). High porosity C). Chemical reactivity D). High density

Correct Answer: B

Q.48 In a common emitter configuration the current amplification factor is expressed as _____.

Ans A). $(\Delta I_C / \Delta I_B)_{VCE}$ B). $(\Delta I_E / \Delta I_C)_{VCE}$ C). $(\Delta I_C \times \Delta I_B)_{VCE}$ D). $(\Delta I_B / \Delta I_C)_{VCE}$

Correct Answer: A

Q.49 What is the effect of subcooling on the performance of a vapour compression refrigeration cycle?

Ans A). It decreases the refrigeration effect. B). It increases the condenser pressure. C). It increases the refrigeration effect. D). It reduces compressor work.

Correct Answer: C

Q.50 Read the following statements regarding a piezoelectric transducer and select which is/are correct.

A. The use of piezoelectric transducer element is confined primarily to dynamic measurement.

B. Piezoelectric material, used in an underwater detection system, is known as sonar.

Ans A). Only B B). Only A C). Neither A nor B D). Both A and B

Correct Answer: D

Q.51 Which of the following techniques is used in time-sharing systems to ensure fair CPU allocation?

Ans A). First-come-first-served scheduling B). Priority scheduling C). Shortest job first scheduling D). Round-robin scheduling

Correct Answer: D

Q.52 Which IEEE standard defines Ethernet LAN (Local Area Network)?

Ans A). IEEE 802.3 B). IEEE 802.15 C). IEEE 802.5 D). IEEE 802.11

Correct Answer: A

Q.53 What is the term for flowing water ecosystems like rivers and streams?

Ans A). Lentic B). Lotic C). Marine D). Wetland

Correct Answer: B

Q.54 Which of the following is NOT a typical application for high carbon steel?

Ans A). Springs B). Cutting tools C). Knives D). Structural beams

Correct Answer: D

Q.55 For a simply supported beam of span L subjected to a central point load P, the shear force just to the left of the load is _____.

Ans A). P/2 B). P/4 C). P D). 0

Correct Answer: A

Q.56 A radiator, in a domestic heating system, operates at a temperature of 27°C. The heat flux at the surface of a radiator, if it behaves as a black body, will be _____.

Ans A). 45.927 W/m² B). 4.5927 W/m² C). 4592.7 W/m² D). 459.27 W/m²

Correct Answer: D

Q.57 Reynolds number can be represented as the ratio of:

Ans A). Inertia force to Viscous force B). Viscous force to Buoyancy force C). Viscous force to Inertia force D). Buoyancy force to Viscous force

Correct Answer: A

Q.58	In which of the following processes does the formation of polymers occur by stepwise intermolecular chemical reactions that may involve more than one monomer species and there is usually a small molecular weight byproduct such as water?			
Ans	A). Crystallisation	B). Condensation polymerisation	C). Chain reaction polymerisation	D). Addition polymerisation Correct Answer: B
Q.59	Which of the following is added to natural rubber and heated to make ebonite?			
Ans	A). Sulphur	B). Phosphorous	C). Magnesium	D). Calcium Correct Answer: A
Q.60	Which of the following polymers have the lowest coefficient of thermal expansion?			
Ans	A). Network polymers	B). Thermoplastic polymers	C). Linear polymers	D). Branched polymers Correct Answer: A
Q.61	What is the phenomenon that occurs in some thermoplastic polymers in which very localised plastic deformation leads to the formation of small and interconnected microvoids called?			
Ans	A). Devitrification	B). Crazing	C). Crystallisation	D). Annealing Correct Answer: B
Q.62	In which application does glycerine NOT serve as a humectant in the food industry?			
Ans	A). To prevent the oxidation of food colour B). To control ice crystal formation in frozen desserts C). To retain moisture in processed meats D). To maintain consistency and prevent drying in dairy products			Correct Answer: A
Q.63	Which of the following is an important chemical parameter to consider when assessing water potability?			
Ans	A). Acidity	B). High concentration of heavy metals	C). Appropriate pH levels	D). High pH Correct Answer: C
Q.64	What is the typical calorific value of producer gas?			
Ans	A). 4,500 - 5,000 kcal/m ³	B). 1,000 - 1,200 kcal/m ³	C). 8,000 - 10,000 kcal/m ³	D). 2,500 - 3,000 kcal/m ³ Correct Answer: B
Q.65	Which of the following is one of the main DISADVANTAGES of using hard water in a boiler?			
Ans	A). Improved water flow	B). Increased heating efficiency	C). Reduced maintenance costs	D). Scaling and limescale buildup Correct Answer: D
Q.66	What is the process by which an atomic nucleus splits into two or more smaller nuclei, releasing a large amount of energy?			
Ans	A). Fusion	B). Radioactive decay	C). Fission	D). Nuclear transmutation Correct Answer: C
Q.67	As per the following options, what is the most suitable property of glycerol?			
Ans	A). It is insoluble in water	B). It is hygroscopic	C). It is a solid at room temperature	D). It has a strong odor Correct Answer: B
Q.68	The EMF induced in the secondary winding of a transformer depends on the _____.			
Ans	A). magnetic flux linkage	B). armature reaction	C). power factor	D). load resistance Correct Answer: A
Q.69	A positron is emitted in _____.			
Ans	A). beta-plus decay	B). beta-negative decay	C). alpha decay	D). gamma decay Correct Answer: A
Q.70	Which of the following is the primary ore used for the extraction of nickel?			
Ans	A). Pentlandite	B). Bauxite	C). Galena	D). Hematite Correct Answer: A
Q.71	Which of the following is an aerobic process used in secondary wastewater treatment?			
Ans	A). Anaerobic Digestion	B). Upflow Anaerobic Sludge Blanket (UASB)	C). Activated Sludge Process	D). Anaerobic Filters Correct Answer: C

Q.72 The following truth table is related to which gate?

Input		Output
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

Ans A). NOR gate

B). OR gate

C). NAND gate

D). XOR gate

Correct Answer: C

Q.73 Read the given statements and select which is/are correct.

A. Resistance strain gauges are very useful for measurement of tension, torque, force and stresses in structures.

B. Strain gauges are used in load cells and proving rings to measure force by the strain produced.

Ans A). Both A and B

B). Only B

C). Only A

D). Neither A nor B

Correct Answer: A

Q.74 Which of the following is NOT a function of lubricant oils?

Ans A). Increasing friction

B). Cooling through heat dissipation

C). Protecting against corrosion and rust

D). Cleansing by removal of contaminants

Correct Answer: A

Q.75 Which of the following is NOT a type of polymer PTC (positive temperature coefficient) thermistor?

Ans A). Monoswitch

B). Semifuse

C). Multifuse

D). Polyswitch

Correct Answer: A

Q.76 Which of the following pairs of lime types and their characteristics is correctly matched?

Ans A). Slaked Lime – Used in RCC Construction

B). Hydraulic Lime – Gains Strength in Air Only

C). Quick Lime – Highly Stable

D). Fat Lime – High Plasticity

Correct Answer: D

Q.77 Which of the following is a primary air pollutant?

Ans A). Nitrogen trioxide

B). Ozone

C). Sulphur trioxide

D). Sulphur dioxide

Correct Answer: D

Q.78 What type of cooling is typically used in outdoor distribution transformers?

Ans A). Dry-type

B). Air natural

C). Oil-immersed

D). Forced air

Correct Answer: C

Q.79 A thermocouple works on the principle of _____.

Ans A). Peltier effect

B). Raman effect

C). Ohm's law

D). Seebeck effect

Correct Answer: D

Q.80 What type of network device assigns IP addresses dynamically in a LAN?

Ans A). DHCP server

B). DNS server

C). Router

D). Switch

Correct Answer: A

Q.81 Which of the following is an example of point-source water pollution?

Ans A). Runoff from agricultural land

B). Animal faeces from dogs and birds

C). Wastewater pipe from a factory

D). Pollutants from car parks

Correct Answer: C

Q.82 Which of the following methods is used to prepare benzene from sodium benzoate?

Ans A). Decarboxylation

B). Oxidation

C). Polymerisation

D). Hydrolysis

Correct Answer: A

Q.83 Which of the following is a major environmental concern associated with Blast Furnace Gas (BFG)?

Ans A). Release of particulate matter

B). High sulphur dioxide emissions

C). Generation of methane

D). Emission of carbon dioxide

Correct Answer: D

Q.84	In which type of gear train are the input and output shafts collinear?				
Ans	A). Simple gear train	B). Reverted gear train	C). Epicyclic gear train	D). Compound gear train	Correct Answer: B
Q.85	What is the most common method for producing aluminium from its ore?				
Ans	A). Smelting	B). Leaching	C). Electrolytic reduction	D). Blast furnace process	Correct Answer: C
Q.86	What is the primary method for extracting copper from sulphide ores like chalcopyrite?				
Ans	A). Electrolytic refining	B). Magnetic separation	C). Leaching	D). Smelting and converting	Correct Answer: D
Q.87	Which type of pattern is specifically designed to produce hollow castings by incorporating cores?				
Ans	A). Segmental pattern	B). Shell pattern	C). Loose piece pattern	D). Cope and drag pattern	Correct Answer: B
Q.88	In a vapour compression refrigeration system, the highest temperature in the cycle occurs _____.				
Ans	A). before the capillary tube	B). after compression	C). after the capillary tube	D). after evaporation	Correct Answer: B
Q.89	Select the correct statement valid only for reversible process conducted by closed system; neglect change in kinetic and potential energy.				
Ans	A). $TdS = dU + TdV$	B). $TdS = dU + WdS$	C). $dQ = dU + TdS$	D). $dQ = dU + pdV$	Correct Answer: D
Q.90	Piezoelectric load cells work on the same principle of _____ as in strain gauge load cell to measure force.				
Ans	A). leaching	B). deformation	C). electromagnet	D). titration	Correct Answer: B
Q.91	If n_{12} is the refractive index of medium 1 with respect to medium 2 and n_{31} is the refractive index of medium 3 with respect to medium 1, then n_{32} , the refractive index of medium 3 with respect to medium 2 will hold the relation _____.				
Ans	A). $n_{32} = n_{31} \times n_{12}$	B). $n_{31} = n_{32} \times n_{12}$	C). $n_{32} = n_{31} - n_{12}$	D). $n_{12} = n_{32} \times n_{31}$	Correct Answer: A
Q.92	Which of the following is NOT a product of petroleum refining?				
Ans	A). Asphalt	B). Kerosene	C). Natural gas	D). Lubricating oil	Correct Answer: C
Q.93	What will be the correct answer of the infix expression $20 - 5 * 2$?				
Ans	A). 10	B). 0	C). 30	D). 20	Correct Answer: A
Q.94	Which of the following is a characteristic of metallurgical coke?				
Ans	A). Contains volatile matter	B). Very fragile	C). Strong and porous	D). Highly dense	Correct Answer: C
Q.95	What is the value of critical angle for the diamond-air interface (refractive index of diamond is 2.42)?				
Ans	A). 47°	B). 25.6°	C). 24.4°	D). 90°	Correct Answer: C
Q.96	Which process is used to break down heavy hydrocarbons into lighter ones?				
Ans	A). Alkylation	B). Reforming	C). Distillation	D). Cracking	Correct Answer: D
Q.97	Which of the following is a close packed plane for the HCP crystal?				
Ans	A). $(10\bar{1}1)$	B). $(\bar{1}010)$	C). $(\bar{1}101)$	D). (0001)	Correct Answer: D
Q.98	High silicon steel is commonly used in:				
Ans	A). aircraft frames	B). automobile engines	C). cooking utensils	D). electrical transformers	Correct Answer: D
Q.99	Which of the following is NOT a stage of the Addition Polymerisation process?				
Ans	A). Propagation	B). Termination	C). Crystallisation	D). Initiation	Correct Answer: C

Q.100 What is a 'carbon sink'?

Ans A). A type of fossil fuel B). A place where carbon is stored away from the atmosphere C). A process that rapidly cycles carbon
D). A place where carbon is released into the atmosphere

Correct Answer: B

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रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Chemical and Metallurgical Supervisor

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 An alloy is considered a homogeneous mixture because:

- Ans A). it exhibits uniform composition throughout B). it contains two or more phases
C). its components are chemically combined in fixed proportions D). its components can be separated by filtration

Correct Answer: A

Q.2 Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.

- Ans A). emotional defects B). mutations C). syndromes D). diseases

Correct Answer: B

Q.3 The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?

- Ans A). Article 123 B). Article 110 C). Article 72 D). Article 356

Correct Answer: A

Q.4 Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?

- Ans A). Smriti Mandhana B). Jhulan Goswami C). Harmanpreet Kaur D). Mithali Raj

Correct Answer: A

Q.5 Which of the following bridges is constructed over the Brahmaputra River in India?

- Ans A). Howrah Bridge B). Pamban Bridge C). Mahatma Gandhi Setu D). Dhola-Sadiya Bridge

Correct Answer: D

Q.6 The main reason for which we are dependent on air is our _____.

- Ans A). excretion B). osmoregulation C). respiration D). digestion

Correct Answer: C

Q.7 Which of the following is NOT a source of collection of municipal solid waste?

- Ans A). Waste from hospitals B). Radioactive waste C). Waste from schools D). Waste from homes

Correct Answer: B

Q.8 Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?

- Ans A). VALUE() B). NUMBERTOTEXT() C). FORMAT() D). TEXT()

Correct Answer: D

Q.9	Which of the following correctly differentiates mixtures and compounds?		
	Feature	Mixture	Compound
	A) Separation	Can be separated by physical methods	Requires chemical me
	B) Composition	Fixed ratio	Variable ratio
	C) Properties	Always the same as constituents	Different from constit
	D) Formation	By chemical reaction	By simple mixing
Ans A). Option C (Properties) is correct B). Option A (Separation) is correct C). Option B (Composition) is correct D). Option D (Formation) is correct			
Correct Answer: B			
Q.10	In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?		
Ans A). Global Navigation Satellite System (GLONASS) B). Galileo C). Global Positioning System (GPS) D). Navigation with Indian Constellation (NavIC)			
Correct Answer: D			
Q.11	A sound wave with a low frequency will have _____.		
Ans A). a low pitch B). a low amplitude C). a short wavelength D). a high pitch			
Correct Answer: A			
Q.12	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?		
Ans A). 5.625 J B). 7.500 J C). 3.750 J D). 1.875 J			
Correct Answer: A			
Q.13	Which of the following options is NOT a greenhouse gas?		
Ans A). Methane B). Nitrous oxide C). Carbon dioxide D). Carbon tetrachloride			
Correct Answer: D			
Q.14	What is the primary function of a computer firewall?		
Ans A). To prevent unauthorised access to a private network B). To speed up internet connectivity C). To detect and remove computer viruses D). To store user passwords securely			
Correct Answer: A			
Q.15	Who is known as the leader of the Green Revolution in India?		
Ans A). Tribhuvandas Kishibhai Patel B). C Subramaniam C). Prof. MS Swaminathan D). Dr. Rajendra Prasad			
Correct Answer: C			
Q.16	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?		
Ans A). iOS B). macOS C). Linux D). Windows			
Correct Answer: C			
Q.17	In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?		
Ans A). 600 metres T20 B). 100 metres T20 C). 400 metres T20 D). 200 metres T20			
Correct Answer: C			
Q.18	A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.		
Ans A). random motion B). uniform motion C). rotational motion D). non-uniform motion			
Correct Answer: B			
Q.19	Which of the following is NOT toxic to non-target organisms in the soil?		
Ans A). Pesticides B). Fungicides C). Herbicides D). Organic fertilisers			
Correct Answer: D			
Q.20	Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?		
Ans A). Ivor Jennings B). BR Ambedkar C). HM Seervai D). LM Singhvi			
Correct Answer: D			
Q.21	The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?		
Ans A). 64 u B). 32 u C). 256 u D). 128 u			
Correct Answer: C			
Q.22	What does LAN stand for?		
Ans A). Large Area Network B). Linked Access Network C). Local Area Network D). Limited Access Node			
Correct Answer: C			

Q.23	Who among the following developed the notation system for Hindustani classical music?			
Ans A).	Ustad Bismillah Khan	B). Ustad Amjad Ali Khan	C). Pandit Ravi Shankar	D). Pandit Vishnu Narayan Bhatkhande
	Correct Answer: D			
Q.24	A concave lens has a focal length of –2 cm. What is its power?			
Ans A).	–0.5 D	B). 25 D	C). –50 D	D). 0.5 D
	Correct Answer: C			
Q.25	Which function key is used to move text or graphics in a document?			
Ans A).	F5	B). F1	C). F12	D). F2
	Correct Answer: D			
Q.26	Which of the following will increase the heat produced by a heating element?			
Ans A).	Using a material with high conductivity	B). Decreasing the applied voltage	C). Increasing the current flowing through the wire	D). Using a wire of lower resistance
	Correct Answer: C			
Q.27	Where can one find the option to change a PowerPoint template?			
Ans A).	Insert → Themes	B). View → Slide Master	C). Home → Layout	D). Design → Themes
	Correct Answer: D			
Q.28	The kinetic energy of an object is derived using which of the following equations of motion?			
Ans A).	$v = u + at$	B). $a = (v - u) / t$	C). $s = ut + \frac{1}{2}at^2$	D). $v^2 - u^2 = 2as$
	Correct Answer: D			
Q.29	What is the primary function of a firewall tool in a computer network?			
Ans A).	To store data securely	B). To speed up internet connections	C). To monitor and control incoming and outgoing network traffic	D). To detect and remove viruses
	Correct Answer: C			
Q.30	A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?			
Ans A).	20%	B). 16.67%	C). 25%	D). 45%
	Correct Answer: B			
Q.31	Which of the following was NOT an artisan guild during the Mauryan period?			
Ans A).	Astrologers	B). Bankers and Merchants	C). Potters	D). Carpenters
	Correct Answer: A			
Q.32	Electricity production is categorised under which of the following economic sectors?			
Ans A).	Quaternary sector	B). Secondary sector	C). Primary sector	D). Tertiary sector
	Correct Answer: B			
Q.33	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.			
Ans A).	1992	B). 1986	C). 1972	D). 1984
	Correct Answer: B			
Q.34	In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.			
Ans A).	organochlorine	B). DDT	C). phosphates	D). chlorine
	Correct Answer: B			
Q.35	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?			
Ans A).	United States	B). France	C). Canada	D). Sweden
	Correct Answer: D			
Q.36	The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.			
Ans A).	UV-A	B). UV-D	C). UV-B	D). UV-C
	Correct Answer: C			
Q.37	Due to global warming, the temperature of the earth has increased by _____			
Ans A).	0.6°C	B). 0.7°C	C). 0.8°C	D). 0.5°C
	Correct Answer: A			

Q.38	Why do covalent compounds generally have low melting and boiling points?			
Ans	A). They have strong electrostatic forces.	B). They contain metallic bonds.	C). They have a rigid lattice structure.	D). They have weak intermolecular forces.
	Correct Answer: D			
Q.39	The people of _____ were famously involved in execution of the Chipko movement.			
Ans	A). Assam	B). Garhwal Himalayas	C). Gujarat	D). Delhi
	Correct Answer: B			
Q.40	What happens to the pH of pure water when a few drops of lemon juice are added?			
Ans	A). The pH becomes neutral	B). The pH increases	C). The pH decreases	D). The pH remains the same
	Correct Answer: C			
Q.41	An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.			
Ans	A). -10.0 cm	B). -37.5 cm	C). -9.37 cm	D). 17.5 cm
	Correct Answer: B			
Q.42	Who among the following established the Bengal Chemical Swadeshi Stores?			
Ans	A). BG Tilak	B). Acharya PC Ray	C). Dadabhai Naoroji	D). Surendranath Banerjee
	Correct Answer: B			
Q.43	The President has the power to dissolve which house of Parliament?			
Ans	A). Rajya Sabha only	B). Legislative Assembly	C). Both Rajya Sabha and Lok Sabha	D). Lok Sabha only
	Correct Answer: D			
Q.44	Which of the following elements has an atomic number of 8?			
Ans	A). Hydrogen	B). Nitrogen	C). Oxygen	D). Carbon
	Correct Answer: C			
Q.45	What is the general orientation of the Himalayan ranges in the northwestern part of India?			
Ans	A). Northeast to Southwest	B). South-North	C). Northwest to Southeast	D). East-South
	Correct Answer: C			
Q.46	A metal wire is stretched, but it does not break easily. This property is known as:			
Ans	A). hardness	B). brittleness	C). ductility	D). malleability
	Correct Answer: C			
Q.47	Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?			
Ans	A). Leica	B). Carl Zeiss AG	C). Schneider Kreuznach	D). Jenoptik
	Correct Answer: B			
Q.48	Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?			
Ans	A). =A2-B2	B). =A2+B2	C). =A2*B2	D). =MULTIPLY(A2,B2)
	Correct Answer: C			
Q.49	What happens when you click on the 'Forward' button in an email?			
Ans	A). The email is permanently deleted.	B). The email is automatically sent to all contacts.	C). The original message is copied into a new email draft.	D). A blank email opens.
	Correct Answer: C			
Q.50	Which type of RAM is faster and DOES NOT require refreshing?			
Ans	A). ROM	B). Flash Memory	C). SRAM	D). DRAM
	Correct Answer: C			

Q.1 What will be the output of the following C code?

```
void main()
{
    int result=1;
    if (++result >1 )
        printf("%d",result+=3);
    else
        printf("%d",result+=5);
}
```

Ans A). 4 B). 5 C). 6 D). 7 **Correct Answer: B**

Q.2 Which of the following statements about a hub in a star topology is true?

Ans A). It prevents collisions. B). It forwards data to all connected devices. C). It improves network security.
D). It filters traffic based on MAC addresses. **Correct Answer: B**

Q.3 Which type of winding is commonly used in core-type transformers?

Ans A). Disk winding B). Cylindrical winding C). Helical winding D). Sandwich winding **Correct Answer: B**

Q.4 Which of the following raw materials is the chief source of sulphur in the blast furnace pig iron?

Ans A). Limestone B). Dolomite C). Coke D). Haematite **Correct Answer: C**

Q.5 What does the %d format specifier represent in scanf()?

Ans A). Floating-point input B). Character input C). Integer input D). String input **Correct Answer: C**

Q.6 Which of the following polymers are composed of extended, rod-shaped and rigid molecules and in the liquid condition the molecules can become aligned in highly ordered configurations?

Ans A). Foams B). Thermoplastic Elastomers C). Ultrahigh Molecular Weight Polyethylene D). Liquid Crystal Polymers **Correct Answer: D**

Q.7 The expression $\oint dQ = \oint dW$ is valid when _____.

Ans A). the first law of thermodynamics is applied to an open system in a flow process
B). the first law of thermodynamics is applied to a closed system for a cyclic process
C). the second law of thermodynamics is applied to a closed system for a cyclic process
D). the second law of thermodynamics is applied to an open system in a flow process **Correct Answer: B**

Q.8 Which of the following pairs is correctly matched regarding door fittings?

Ans A). Hinges - Used to lock the door B). Aldrop - Used for sliding doors C). Door Stopper - Used to hold the door at an angle
D). Tower Bolt - Used to open the door automatically **Correct Answer: C**

Q.9 Which of the following is a technique used to control gaseous pollutants by transferring them into a liquid?

Ans A). Adsorption B). Absorption C). Incineration D). Filtration **Correct Answer: B**

Q.10 Molybdenum is added to steel to _____.

Ans A). improve ductility B). reduce weight C). increase corrosion resistance D). improve hardness and strength **Correct Answer: D**

Q.11 Which of the following is a major application of liquefied natural gas (LNG)?

Ans A). Feedstock for plastic production B). Raw material for fertiliser production C). Fuel for power generation
D). Coolant in industrial processes **Correct Answer: C**

Q.12 In an energy diagram of P-N junction, when the junction is at equilibrium _____.

Ans A). an energy gap between the conduction and valance bands increases B). an energy gradient exists across the depletion region
C). no energy gradient exists across the depletion region D). an energy gap between the conduction and valance bands decreases

Correct Answer: B

Q.13 A router determines the best path between source and destination for sending data using:				
Ans A).	IP addresses	B). MAC addresses	C). port numbers	D). data packets
Correct Answer: A				
Q.14 Which of the following is the most fundamental principle of surveying?				
Ans A).	Measuring distances accurately only when required	B). Working from whole to part	C). Taking measurements without reference to control points	D). Avoiding triangulation methods
Correct Answer: B				
Q.15 What is the mechanism of plastic deformation in non-crystalline ceramics?				
Ans A).	Twinning	B). Slip	C). Viscous flow	D). Cross-slip
Correct Answer: C				
Q.16 The architecture of an operating system consists of:				
Ans A).	Kernel only	B). CPU and Memory	C). Hardware only	D). Kernel and Shell
Correct Answer: D				
Q.17 Which of the following is a disadvantage of Monel?				
Ans A).	High cost	B). Low strength	C). Poor machinability	D). Susceptibility to corrosion
Correct Answer: A				
Q.18 Which of the following is NOT a way that sulfur is released into the atmosphere?				
Ans A).	Burning of fossil fuels	B). Decomposition of organic molecules	C). Photosynthesis	D). Volcanic activity
Correct Answer: C				
Q.19 A concave lens forms an image at a distance of 20 cm from the lens when an object is placed at a distance of 30 cm from the lens. Calculate the power of the lens.				
Ans A).	$\frac{5}{3}D$	B). $-\frac{5}{3}D$	C). $\frac{3}{5}D$	D). $-\frac{3}{5}D$
Correct Answer: B				
Q.20 Which of the following characteristics is primarily responsible for most polymeric materials being poor conductors of electricity?				
Ans A).	Weak bonding	B). Low tensile strength	C). Unavailability of free electrons	D). Low melting temperature
Correct Answer: C				
Q.21 What is the drawback of hot forging compared to cold forging?				
Ans A).	Increased hardness of the final product	B). Reduced ductility of the material	C). Poor surface finish and lower dimensional accuracy	D). Increased residual stresses
Correct Answer: C				
Q.22 Which of the following statements is NOT true?				
Ans A).	At critical angle incident angle is 90°	B). Incidence angle must be greater than critical angle	C). In total internal reflection no transmission of light take place	D). For total internal reflection light ray must travel from denser medium to rarer medium
Correct Answer: A				
Q.23 What is the function of an oxidiser in an explosive material?				
Ans A).	To contribute atoms of oxidising elements for the fuel to burn	B). To control the rate of reaction	C). To decrease the sensitivity of the explosive	D). To absorb heat and prevent explosion
Correct Answer: A				
Q.24 What will be the output of the following C code?				
<pre>#include <stdio.h> void main() { int Array[5]={12,32,56,78}; printf("%d",Array[4]); }</pre>				
Ans A).	78	B). 0	C). 4	D). Error
Correct Answer: B				
Q.25 Which of the following statements is INCORRECT about ammonium nitrate?				
Ans A).	It is highly soluble in water.	B). It decomposes at the temperature 210°C-260°C.	C). It is hygroscopic in nature.	D). It has pH more than 7.5.
Correct Answer: D				

Q.26 Which of the following is true for a hydraulic load cell?

Ans A). This technology is cheaper than all other types of load cells.

B). These type of load cells are not effective devices in outdoor environments.

C). The load cell is completely filled with oil.

D). The piston does actually come in contact with the load cell.

Correct Answer: C

Q.27 Which material is used to insulate the commutator segments in a DC generator?

Ans A). Rubber

B). Mica

C). Fiberglass

D). Plastic

Correct Answer: B

Q.28 Why has carbon tetrachloride production and use been restricted in the UK?

Ans A). It causes respiratory issues

B). It is a highly flammable substance

C). It is a known carcinogen

D). It depletes the ozone layer

Correct Answer: D

Q.29 Which liquid fuel is most commonly used in automobiles worldwide?

Ans A). Ethanol

B). Gasoline

C). Natural gas

D). Kerosene

Correct Answer: B

Q.30 Which of the following are the Miller Indices of a close packed plane in the FCC crystal?

Ans A). (100)

B). (112)

C). (110)

D). (111)

Correct Answer: D

Q.31 What is the typical carbon content range in high carbon steel?

Ans A). 0.1% to 0.3%

B). 2.0% to 4.0%

C). 0.01% to 0.1%

D). 0.6% to 1.5%

Correct Answer: D

Q.32 Which of the following is an example of an abiotic factor in an ecosystem?

Ans A). The amount of sunlight

B). A population of deer

C). A forest of pine trees

D). A community of bacteria

Correct Answer: A

Q.33 What makes biodiesel a sustainable alternative to traditional diesel?

Ans A). It is produced from renewable sources like vegetable oils.

B). It is derived from crude oil.

C). It has a higher energy density.

D). It is cheaper to produce.

Correct Answer: A

Q.34 In a p-type semiconductor, the acceptor energy level is located:

Ans A). slightly below the valence band

B). slightly above the valence band

C). in the middle of conduction band and valence band

D). slightly below the conduction band

Correct Answer: B

Q.35 In a cascade refrigeration system:

Ans A). refrigeration effect is obtained using a single refrigerant

B). two different refrigerants are used, refrigerant with low NBP is placed in the evaporator and refrigerant with high NBP is placed in condenser

C). two different refrigerants are used, either of the refrigerants can be placed in the evaporator or condenser side

D). two different refrigerants are used, refrigerant with high NBP is placed in evaporator and refrigerant with low NBP is placed in condenser

Correct Answer: B

Q.36 A grey body ($\epsilon = 0.8$) emits the same amount of heat as the black body at 1075 K. The required temperature of the grey body will be _____.

Ans A). 113.672°C

B). 1136.72 K

C). 113.672 K

D). 1136.72°C

Correct Answer: B

Q.37 Which of the following steps is typically NOT involved in the preparation of glycerine for injection?

Ans A). Decolorisation using activated carbon

B). Coarse filtration

C). Ultra-filtration

D). Fermentation

Correct Answer: D

Q.38 A solid shaft is replaced by a hollow shaft of the same material and weight. To achieve the same strength in torsion, the outer diameter of the hollow shaft should be:

Ans A). less than the diameter of the solid shaft

B). independent of the diameter of the solid shaft

C). greater than the diameter of the solid shaft

D). equal to the diameter of the solid shaft

Correct Answer: C

Q.39 Which of the following components has the highest percentage in coal oven gas?

Ans A). Methane (CH_4)

B). Carbon dioxide (CO_2)

C). Carbon monoxide (CO)

D). Hydrogen (H_2)

Correct Answer: D

Q.40 Which of the following statements describes the relationship between rolling friction and static friction?

- Ans A). Rolling friction is slightly greater than static friction
B). Rolling friction is always equal to static friction
C). Rolling friction is much smaller than static friction
D). Rolling friction is much greater than static friction

Correct Answer: C

Q.41 What will be the output of the following C code?

```
#include <stdio.h>
int main() {
int a = 10, b = 20;
if (a = b > 15)
printf("True");
else
printf("False");
return 0;
}
```

- Ans A). False
B). TrueFalse
C). True
D). Compile-time error

Correct Answer: C

Q.42 Calculate the mass defect of the Helium nucleus which consists of 2 proton and 2 neutrons. The masses of the individual particle are:

Mass of proton – 1.007276 u
Mass of neutron – 1.008665 u
Mass of helium nucleus – 4.001503 u

- Ans A). 0.048377 u
B). 0.040377 u
C). 0.030379 u
D). 0.038377 u

Correct Answer: C

Q.43 Which property of brass makes it suitable for musical instruments?

- Ans A). Low density
B). High melting point
C). Excellent acoustic properties
D). High electrical conductivity

Correct Answer: C

Q.44 Which of the following correctly depicts the progressive metamorphism of coal and its effect on the increase in rank?

- Ans A). Peat → Lignite → Bituminous coal → Anthracite → Graphite
B). Lignite → Peat → Bituminous coal → Anthracite → Graphite
C). Lignite → Bituminous coal → Peat → Anthracite → Graphite
D). Peat → Lignite → Anthracite → Bituminous coal → Graphite

Correct Answer: A

Q.45 There are two tables: Professor and Department. In order to retrieve all employees and their department names, even if some employees are not assigned to a department, which JOIN should be used?

- Ans A). FULL JOIN
B). INNER JOIN
C). LEFT JOIN
D). RIGHT JOIN

Correct Answer: C

Q.46 What is the correct way to create a hyperlink in HTML?

- Ans A). <a>www.xyz.com
B). <url>www.xyz.com</url>
C). <link href="www.zyx.com">Click Here</link>
D). Click Here

Correct Answer: D

Q.47 What is the primary advantage of using a multi-level cache hierarchy?

- Ans A). Decreased memory access latency
B). Improved disk read/write speeds
C). Reduced power consumption
D). Increased main memory capacity

Correct Answer: A

Q.48 Which process is used to produce coal oven gas?

- Ans A). Fractional distillation
B). Electrolysis
C). Destructive distillation of coal
D). Steam reforming

Correct Answer: C

Q.49 For semiconductor the energy (E_g) band gap (at room temperature) between valence band and conduction band is _____.

- Ans A). $E_g = 7\text{eV}$
B). $E_g = 0\text{ eV}$
C). $E_g > 3\text{eV}$
D). $E_g < 3\text{eV}$

Correct Answer: D

Q.50 In a compound gear train, the 'Train Value' is:

- Ans A). the reciprocal of the velocity ratio
B). the ratio of the speed of the driving gear to the speed of the driven gear
C). the ratio of the number of teeth on the driven gear to the driver gear
D). the product of the gear ratios in all stages

Correct Answer: A

Q.51	Which of the following equations represents the voltage-pressure relationship in a piezoelectric transducer?			
Ans A).	$V = gPt$	B).	$V = P/gt$	Correct Answer: A
	C).	$V = g/Pt$	D).	$V = gP/t$
Q.52	What is the lowest temperature at which rubber-like behaviour persists for many of the common elastomers and below which an elastomer becomes brittle?			
Ans A).	Critical temperature	B).	Curie temperature	Correct Answer: C
	C).	Glass transition temperature	D).	Neel temperature
Q.53	Which of the following is a consequence of climate change that threatens biodiversity?			
Ans A).	Expansion of natural habitats	B).	Increased agricultural yields	Correct Answer: D
	D).	Melting ice caps affecting polar habitats	C).	Decrease in human population
Q.54	In a common emitter transistor, the collector current (I_c) is 10 mA and the base current (I_B) is 0.1 mA. Calculate the current gain of the transistor.			
Ans A).	1	B).	10	Correct Answer: D
	C).	0.1	D).	100
Q.55	The emissive power of certain black bodies is P. If the temperature of the black body is tripled, the emissive power will become _____.			
Ans A).	81P	B).	27P	Correct Answer: A
	C).	9P	D).	3P
Q.56	Which of the following ceramics exhibits piezoelectricity?			
Ans A).	BaTiO ₃	B).	ZrO ₂	Correct Answer: A
	C).	Al ₂ O ₃	D).	MgO
Q.57	Which of the following is NOT a property of nuclear force?			
Ans A).	It is attractive in nature.	B).	Nuclear force is much stronger than Coulomb's force.	Correct Answer: D
	D).	It depends on charge.	C).	It has saturation property.
Q.58	The refrigerant enters in the evaporator as _____ in the ideal vapour compression cycle.			
Ans A).	high-pressure liquid	B).	low-pressure liquid	Correct Answer: C
	C).	low-pressure liquid-vapor mixture	D).	low-pressure vapor
Q.59	What is the boiling point of ethyl alcohol (ethanol) at standard atmospheric pressure?			
Ans A).	51.2 °C	B).	100 °C	Correct Answer: C
	C).	78.2 °C	D).	120 °C
Q.60	Which of the following impurities is commonly found in Coal Oven Gas (COG) and must be removed before its use?			
Ans A).	Helium (He)	B).	Ammonia (NH ₃)	Correct Answer: B
	C).	Oxygen (O ₂)	D).	Argon (Ar)
Q.61	In a full mesh topology with 7 nodes, how many direct connections are required?			
Ans A).	7	B).	14	Correct Answer: C
	C).	21	D).	11
Q.62	For mass production of small components, which of the following is the most suitable pattern?			
Ans A).	Loose piece pattern	B).	Match plate pattern	Correct Answer: B
	C).	Skeleton pattern	D).	Sweep pattern
Q.63	What is the purpose of dechlorination in tertiary wastewater treatment?			
Ans A).	To remove the chlorine that was used to disinfect the water	B).	To filter out large solid contaminants	Correct Answer: A
	C).	To add chlorine to kill bacteria and viruses	D).	To purify wastewater through oxidation
Q.64	Why is biodiversity important for agriculture?			
Ans A).	Because it promotes the use of monoculture farming	B).	Because it reduces the need for pollination	Correct Answer: C
	C).	Because it supports pollinators and maintains healthy soil	D).	Because it decreases the nutritional value of crops
Q.65	A light incidence on a mirror at an angle 30°, calculate the angle of reflection.			
Ans A).	90°	B).	60°	Correct Answer: D
	C).	45°	D).	30°

Q.66	Which of the following raw materials in blast furnace iron making acts as a fuel source to provide the heat, acts as a reducing agent, and provides an open permeable bed through which slag and metal pass down into the hearth and hot reducing gases pass upwards?			
Ans A).	Dolomite	B). Coke	C). Limestone	D). Coal
Correct Answer: B				
Q.67	Which property of copper makes it ideal for electrical wiring?			
Ans A).	High density	B). High electrical conductivity	C). Low thermal conductivity	D). Low ductility
Correct Answer: B				
Q.68	Which of the following methods is commonly NOT used for the commercial preparation of ammonium chloride?			
Ans A).	Reacting ammonium sulphate with sodium chloride, involving heating, evaporation and cooling			
B).	Reacting sodium chloride with carbon dioxide and ammonia in the Solvay process			
C).	Reacting ammonia with hydrogen chloride gas or hydrochloric acid		D). Electrolysis of ammonium salts	
Correct Answer: D				
Q.69	What is the number of the nearest neighbour atoms in contact with any atom in the BCC crystal?			
Ans A).	8	B). 12	C). 4	D). 6
Correct Answer: A				
Q.70	Which of the following polymers have extensive covalent crosslinks between adjacent molecular chains?			
Ans A).	Network polymers	B). Linear polymers	C). Thermoplastic polymers	D). Polyethylene
Correct Answer: A				
Q.71	Which of the following is a physical property of benzene?			
Ans A).	It reacts vigorously with water		B). It is a colourless liquid with a sweet odour	
C).	It is highly reactive due to the presence of double bonds		D). It is denser than water	
Correct Answer: B				
Q.72	Which of the following statements removes a primary key constraint from an existing table whose name is BookStore?			
Ans A).	ALTER TABLE BookStore REMOVE PRIMARY KEY;		B). DELETE PRIMARY KEY FROM BookStore;	
C).	DROP PRIMARY KEY FROM BookStore;		D). ALTER TABLE BookStore DROP PRIMARY KEY;	
Correct Answer: D				
Q.73	By which of the following methods do the conducting polymers which have an electron energy band structure characteristic of that for an electrical insulator at 0 K become conductive?			
Ans A).	Heat treatment	B). Annealing	C). Crazing	D). Doping
Correct Answer: D				
Q.74	Which of the following is the deformation behaviour of glassy thermoplastics below their glass transition temperatures?			
Ans A).	Flexible	B). Soft	C). Ductile	D). Brittle
Correct Answer: D				
Q.75	Select the correct option based on the given statements about the soundness test of cement. Statement 1: The soundness test ensures that cement does not undergo excessive expansion after setting. Statement 2: Excess magnesia (MgO) and free lime (CaO) in cement cause volume expansion.			
Ans A).	Statement 1 is true, but Statement 2 is false.		B). Both statements are true, and Statement 2 explains Statement 1.	
C).	Both statements are true, but Statement 2 does not explain Statement 1.		D). Statement 1 is false, but Statement 2 is true.	
Correct Answer: B				
Q.76	How does hard water affect the lifespan of boiler components?			
Ans A).	It has no effect on lifespan			
B).	It extends the lifespan due to better heat retention			
C).	It accelerates wear and tear on components			
D).	It improves the efficiency of components			
Correct Answer: C				

Q.77	In the context of space exploration, what is the primary reason for using cryogenic liquid fuels like liquid hydrogen and liquid oxygen in rocket propulsion systems?			
Ans	A). They provide the highest specific impulse among chemical propellants.	B). They are easier to store and handle than other fuels.	C). They produce minimal greenhouse gas emissions.	D). They are cheaper to produce than solid fuels.
	Correct Answer: A			
Q.78	Molybdenum is commonly used in _____.			
Ans	A). high carbon steel	B). high-speed steel	C). low carbon steel	D). stainless steel
	Correct Answer: B			
Q.79	What is the primary reason platinum metal is preferred over other metals for Resistance Temperature Detector (RTD) construction?			
Ans	A). It has a high thermal conductivity.	B). It is the most cost-effective metal for temperature sensing.	C). It has a stable and non linear relation ship between temperature and resistance.	D). It exhibits a perfectly linear resistance-temperature relationship.
	Correct Answer: D			
Q.80	The cycle on which an air refrigerator works is known as _____.			
Ans	A). Carnot cycle	B). Ericson cycle	C). Stirling cycle	D). Bell Coleman cycle
	Correct Answer: D			
Q.81	What is the difference between armature torque (T_a) and shaft torque (T_s) called?			
Ans	A). Loss torque	B). Rotor resistance torque	C). Electrical torque	D). Eddy current torque
	Correct Answer: A			
Q.82	Which property of zinc makes it suitable for galvanising steel?			
Ans	A). High density	B). Corrosion resistance	C). High melting point	D). High electrical conductivity
	Correct Answer: B			
Q.83	Select the correct option based on the given statements regarding bamboo reinforcement in concrete structures.			
	Statement 1: Bamboo can be used as reinforcement in concrete structures.			
	Statement 2: Bamboo reinforcement provides strength equal to steel in all conditions.			
Ans	A). Statement 1 is true, but Statement 2 is false.	B). Both Statements 1 and 2 are false.	C). Both Statements 1 and 2 are true.	D). Statement 1 is false, but Statement 2 is true.
	Correct Answer: A			
Q.84	Which of the following materials is commonly used in piezoelectric transducers?			
Ans	A). Silicon	B). Copper	C). Quartz	D). Aluminium
	Correct Answer: C			
Q.85	How does hard water affect energy consumption in boilers?			
Ans	A). Decreases energy consumption	B). Increases energy consumption	C). No effect on energy consumption	D). Stabilises energy consumption
	Correct Answer: B			
Q.86	The 'Moody's Chart' is used to determine the _____.			
Ans	A). Reynolds number	B). friction factor in pipe flow	C). hydraulic radius	D). velocity of flow
	Correct Answer: B			
Q.87	A thermocouple vacuum gauge operates on the principle that at low pressures, the thermal conductivity of a gas is the function of _____.			
Ans	A). pressure	B). resistivity	C). density	D). temperature
	Correct Answer: A			
Q.88	Match the Plane Table Methods with their Characteristics.			
	Method	Characteristic		
	P) Radiation	1) Uses two known points to locate an unknown point		
	Q) Intersection	2) Involves connecting several stations in sequence		
	R) Resection	3) Used when a single point is fixed and multiple points are determined		
	S) Traversing	4) Determines the position of the instrument station		
Ans	A). P-2, Q-4, R-3, S-1	B). P-3, Q-1, R-4, S-2	C). P-1, Q-3, R-2, S-4	D). P-4, Q-2, R-1, S-3
	Correct Answer: B			
Q.89	Which of the following polymers soften when heated and harden when cooled?			
Ans	A). Network polymers	B). Thermoplastic polymers	C). Thermosetting polymers	D). Crosslinked polymers
	Correct Answer: B			

Q.90 By reverse biasing the PN junction diode, the width of depletion layer _____.

Ans A). is independent of bias B). remains same as that of in forward bias PN junction C). increases D). decreases

Correct Answer: C

Q.91 Transformers work on the principle of _____.

Ans A). displacement current B). self induction C). conservation of charge D). mutual induction

Correct Answer: D

Q.92 For a certain material, the values of transmissivity and reflectivity are specified as 0.88 and 0.07, respectively. The absorptivity of that material is _____.

Ans A). 0.88 B). 1 C). 0.05 D). 0.07

Correct Answer: C

Q.93 Which of the following is an example of a solid lubricant?

Ans A). Lithium grease B). Silicone grease C). Calcium grease D). Graphite

Correct Answer: D

Q.94 What is the primary indicator of the biological health of a water body?

Ans A). Electrical conductivity B). pH C). Dissolved oxygen D). Turbidity

Correct Answer: C

Q.95 _____ type of flame is commonly used for welding mild steel.

Ans A). Neutral B). Reducing C). Oxidising D). Carburising

Correct Answer: A

Q.96 Select the correct statement.

Ans A). Stefan-Boltzmann Law is obtained by integrating Plank's Law over all frequencies
B). Stefan-Boltzmann Law is obtained by integrating Plank's Law over all wavelengths.
C). Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all frequencies.
D). Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all wavelengths.

Correct Answer: B

Q.97 What is the dimension of strain?

Ans A). $[M^0L^0T^0]$ B). $[M^1L^2T^{-2}]$ C). $[M^1L^1T^1]$ D). $[M^0L^3T^0]$

Correct Answer: A

Q.98 Which of the following are the various types of load cells used to convert slowly varying forces into electrical signals?

Ans A). Dynamic load cells, hydraulic load cells and pneumatic load cells
B). Hydraulic load cells, pneumatic load cells and strain gauge load cells
C). Dynamic load cells, hydraulic load cells and strain gauge load cells
D). Dynamic load cells, pneumatic load cells and strain gauge load cells

Correct Answer: B

Q.99 Which of the following is the primary source of calcium in Portland cement production?

Ans A). Clay B). Shale C). Limestone D). Iron ore

Correct Answer: C

Q.100 What is the purpose of using A-weighting in noise measurement?

Ans A). To measure peak sound pressure from machinery B). To mirror the range of human hearing sensitivity
C). To measure low-frequency components of sound D). To represent noise levels without any frequency weights

Correct Answer: B



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 CMA

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 Which of the following options is NOT a greenhouse gas?

Ans A). Carbon tetrachloride B). Carbon dioxide C). Methane D). Nitrous oxide

Correct Answer: A

Q.2 A car moving at a constant speed of 123 km/hr along a straight road is an example of

Ans A). non-uniform motion B). uniform motion C). random motion D). rotational motion

Correct Answer: B

Q.3 An alloy is considered a homogeneous mixture because:

Ans A). it contains two or more phases B). its components are chemically combined in fixed proportions
C). its components can be separated by filtration D). it exhibits uniform composition throughout

Correct Answer: D

Q.4 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?

Ans A). Navigation with Indian Constellation (NavIC) B). Global Positioning System (GPS) C). Galileo
D). Global Navigation Satellite System (GLONASS)

Correct Answer: A

Q.5 Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?

Ans A). Jhulan Goswami B). Mithali Raj C). Harmanpreet Kaur D). Smriti Mandhana

Correct Answer: D

Q.6 Which of the following elements has an atomic number of 8?

Ans A). Oxygen B). Nitrogen C). Carbon D). Hydrogen

Correct Answer: A

Q.7 What is the general orientation of the Himalayan ranges in the northwestern part of India?

Ans A). South-North B). East-South C). Northwest to Southeast D). Northeast to Southwest

Correct Answer: C

Q.8 Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?

Ans A). BR Ambedkar B). LM Singhvi C). Ivor Jennings D). HM Seervai

Correct Answer: B

Q.9 Who among the following established the Bengal Chemical Swadeshi Stores?				
Ans A). Surendranath Banerjee	B). Dadabhai Naoroji	C). Acharya PC Ray	D). BG Tilak	Correct Answer: C
Q.10 The main reason for which we are dependent on air is our ____.				
Ans A). digestion	B). osmoregulation	C). respiration	D). excretion	Correct Answer: C
Q.11 A concave lens has a focal length of -2 cm. What is its power?				
Ans A). 0.5 D	B). -50 D	C). 25 D	D). -0.5 D	Correct Answer: B
Q.12 Where can one find the option to change a PowerPoint template?				
Ans A). Design → Themes	B). Insert → Themes	C). Home → Layout	D). View → Slide Master	Correct Answer: A
Q.13 Due to global warming, the temperature of the earth has increased by ____.				
Ans A). 0.8°C	B). 0.5°C	C). 0.7°C	D). 0.6°C	Correct Answer: D
Q.14 What does LAN stand for?				
Ans A). Large Area Network	B). Limited Access Node	C). Linked Access Network	D). Local Area Network	Correct Answer: D
Q.15 What happens when you click on the 'Forward' button in an email?				
Ans A). A blank email opens. B). The original message is copied into a new email draft. C). The email is automatically sent to all contacts. D). The email is permanently deleted.				Correct Answer: B
Q.16 Radiations that are emitted from nuclear wastes are known to cause ____ at a high rate.				
Ans A). mutations	B). diseases	C). syndromes	D). emotional defects	Correct Answer: A
Q.17 Why do covalent compounds generally have low melting and boiling points?				
Ans A). They have a rigid lattice structure. B). They contain metallic bonds. C). They have strong electrostatic forces. D). They have weak intermolecular forces.				Correct Answer: D
Q.18 For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year ____.				
Ans A). 1984	B). 1972	C). 1992	D). 1986	Correct Answer: D
Q.19 Which of the following bridges is constructed over the Brahmaputra River in India?				
Ans A). Pamban Bridge	B). Howrah Bridge	C). Mahatma Gandhi Setu	D). Dhola-Sadiya Bridge	Correct Answer: D
Q.20 Which of the following is NOT a source of collection of municipal solid waste?				
Ans A). Waste from hospitals	B). Waste from schools	C). Waste from homes	D). Radioactive waste	Correct Answer: D
Q.21 Who is known as the leader of the Green Revolution in India?				
Ans A). Tribhuvandas Kishibhai Patel	B). Dr. Rajendra Prasad	C). C Subramaniam	D). Prof. MS Swaminathan	Correct Answer: D
Q.22 The atomic mass of sulphur is 32 u, and sulphur exists as S₈ molecules. What is the molecular mass of sulphur?				
Ans A). 64 u	B). 32 u	C). 256 u	D). 128 u	Correct Answer: C
Q.23 Which of the following will increase the heat produced by a heating element?				
Ans A). Using a wire of lower resistance B). Using a material with high conductivity C). Decreasing the applied voltage D). Increasing the current flowing through the wire				Correct Answer: D
Q.24 In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of ____.				
Ans A). phosphates	B). organochlorine	C). DDT	D). chlorine	Correct Answer: C

Q.25	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?			
Ans A).	United States	B). France	C). Sweden	D). Canada
	Correct Answer: C			
Q.26	A sound wave with a low frequency will have _____.			
Ans A).	a low amplitude	B). a low pitch	C). a high pitch	D). a short wavelength
	Correct Answer: B			
Q.27	The kinetic energy of an object is derived using which of the following equations of motion?			
Ans A).	$s = ut + \frac{1}{2}at^2$	B). $v = u + at$	C). $a = (v - u) / t$	D). $v^2 - u^2 = 2as$
	Correct Answer: D			
Q.28	Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?			
Ans A).	=MULTIPLY(A2,B2)	B). =A2+B2	C). =A2-B2	D). =A2*B2
	Correct Answer: D			
Q.29	Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?			
Ans A).	Carl Zeiss AG	B). Leica	C). Jenoptik	D). Schneider Kreuznach
	Correct Answer: A			
Q.30	Which of the following was NOT an artisan guild during the Mauryan period?			
Ans A).	Astrologers	B). Bankers and Merchants	C). Potters	D). Carpenters
	Correct Answer: A			
Q.31	Which type of RAM is faster and DOES NOT require refreshing?			
Ans A).	ROM	B). Flash Memory	C). DRAM	D). SRAM
	Correct Answer: D			
Q.32	Electricity production is categorised under which of the following economic sectors?			
Ans A).	Primary sector	B). Tertiary sector	C). Quaternary sector	D). Secondary sector
	Correct Answer: D			
Q.33	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?			
Ans A).	Linux	B). Windows	C). iOS	D). macOS
	Correct Answer: A			
Q.34	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?			
Ans A).	TEXT()	B). FORMAT()	C). NUMBERTOTEXT()	D). VALUE()
	Correct Answer: A			
Q.35	In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?			
Ans A).	200 metres T20	B). 400 metres T20	C). 100 metres T20	D). 600 metres T20
	Correct Answer: B			
Q.36	What is the primary function of a firewall tool in a computer network?			
Ans A).	To speed up internet connections	B). To monitor and control incoming and outgoing network traffic	C). To store data securely	D). To detect and remove viruses
	Correct Answer: B			
Q.37	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?			
Ans A).	5.625 J	B). 7.500 J	C). 1.875 J	D). 3.750 J
	Correct Answer: A			
Q.38	Which function key is used to move text or graphics in a document?			
Ans A).	F1	B). F12	C). F5	D). F2
	Correct Answer: D			
Q.39	What is the primary function of a computer firewall?			
Ans A).	To store user passwords securely	B). To speed up internet connectivity	C). To prevent unauthorised access to a private network	D). To detect and remove computer viruses
	Correct Answer: C			

Q.40 Which of the following is NOT toxic to non-target organisms in the soil?				
Ans A). Fungicides	B). Herbicides	C). Organic fertilisers	D). Pesticides	Correct Answer: C
Q.41 The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?				
Ans A). Article 123	B). Article 356	C). Article 72	D). Article 110	Correct Answer: A
Q.42 A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?				
Ans A). 20%	B). 16.67%	C). 45%	D). 25%	Correct Answer: B
Q.43 The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is ____.				
Ans A). UV-A	B). UV-C	C). UV-D	D). UV-B	Correct Answer: D
Q.44 The people of _____ were famously involved in execution of the Chipko movement.				
Ans A). Delhi	B). Gujarat	C). Assam	D). Garhwal Himalayas	Correct Answer: D
Q.45 An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be ____.				
Ans A). -9.37 cm	B). -10.0 cm	C). -37.5 cm	D). 17.5 cm	Correct Answer: C
Q.46 What happens to the pH of pure water when a few drops of lemon juice are added?				
Ans A). The pH remains the same	B). The pH decreases	C). The pH increases	D). The pH becomes neutral	Correct Answer: B
Q.47 Who among the following developed the notation system for Hindustani classical music?				
Ans A). Pandit Ravi Shankar	B). Ustad Amjad Ali Khan	C). Pandit Vishnu Narayan Bhatkhande	D). Ustad Bismillah Khan	Correct Answer: C
Q.48 The President has the power to dissolve which house of Parliament?				
Ans A). Rajya Sabha only	B). Legislative Assembly	C). Lok Sabha only	D). Both Rajya Sabha and Lok Sabha	Correct Answer: C
Q.49 A metal wire is stretched, but it does not break easily. This property is known as:				
Ans A). hardness	B). malleability	C). ductility	D). brittleness	Correct Answer: C
Q.50 Which of the following correctly differentiates mixtures and compounds?				
Feature	Mixture	Compound		
A) Separation	Can be separated by physical methods	Requires chemical me		
B) Composition	Fixed ratio	Variable ratio		
C) Properties	Always the same as constituents	Different from constit		
D) Formation	By chemical reaction	By simple mixing		
Ans A). Option C (Properties) is correct	B). Option B (Composition) is correct	C). Option D (Formation) is correct		
D). Option A (Separation) is correct	Correct Answer: D			

Q.1 Why are s-block elements highly reactive?				
Ans A). They have completely filled orbitals.		B). They have low atomic size.		C). They have low ionisation enthalpy.
D). They have high ionisation enthalpy.		Correct Answer: C		
Q.2 Which of the following is a fundamental unit?				
Ans A). Kilogram (kg)		B). Pascal (Pa)		C). Joule (J)
				D). Newton (N)
Correct Answer: A				

Q.3	What does the Lewis symbol for an element represent?			
Ans	A). The number of protons in an atom	B). The total number of electrons in an atom	C). The atomic mass of an element	D). The valence electrons of an atom
	Correct Answer: D			
Q.4	Three resistors of resistances 2, 4 and 8 ohms are connected in parallel. What is the equivalent resistance?			
Ans	A). 3.1 ohms	B). 1.1 ohms	C). 0.4 ohms	D). 2.3 ohms
	Correct Answer: B			
Q.5	Which of the following is the correct unit of coefficient of thermal conductivity in terms of Watt (W), metre (m) and Kelvin (K)?			
Ans	A). $W^{-1} m K$	B). $W m K$	C). $W m^{-1} K^{-1}$	D). $W m^{-1} K$
	Correct Answer: C			
Q.6	Which of the following correctly represents the relation between the number of free electrons n_e and number of holes n_h for an intrinsic semiconductors?			
Ans	A). $n_e > n_h$	B). $n_e < n_h$	C). $n_e = n_h$	D). $n_e = n_h^2$
	Correct Answer: C			
Q.7	During electrolytic refining, which of the following occurs at the anode?			
Ans	A). Oxidation of metal	B). Reduction of metal	C). Metal deposition	D). Hydrogen gas formation
	Correct Answer: A			
Q.8	In the chemical reaction $ZnO + C \rightarrow Zn + CO$, ZnO is getting _____ and carbon is getting _____.			
Ans	A). oxidised, oxidised	B). reduced; reduced	C). reduced; decomposed	D). reduced; oxidised
	Correct Answer: D			
Q.9	When a beam of 5.5 MeV α-particles emitted from a ${}^{214}_{83}Bi$ radioactive source is allowed to fall on a thin foil of gold of thickness $2.1 \times 10^{-7} m$, then what percentage of an incident α-particles scatter by more than 1°.			
Ans	A). 0.014%	B). 14.0%	C). 1.4%	D). 0.14%
	Correct Answer: D			
Q.10	Which of the following is a major cause of eutrophication in water bodies?			
Ans	A). Excessive use of pesticides in agriculture B). High concentration of phosphates and nitrates C). Presence of dissolved oxygen in water D). Dumping of heavy metals into rivers			
	Correct Answer: B			
Q.11	In longitudinal waves, which of the following options describes the direction of motion of the particles of the medium through which the wave is propagating?			
Ans	A). No motion of the particle B). Move in a direction parallel to the direction of propagation C). Move in random directions D). Up and down about their mean position			
	Correct Answer: B			
Q.12	Which natural indicator turns dark pink in an acidic solution and green in a basic solution?			
Ans	A). Turmeric	B). Litmus	C). China rose (Hibiscus)	D). Methyl orange
	Correct Answer: C			
Q.13	A nucleus A_ZX undergoes beta minus (β^-) decay. What will happen to the atomic number of A_ZX?			
Ans	A). It will increase by 2.	B). It will decrease by 2.	C). It will remain unchanged.	D). It will increase by 1.
	Correct Answer: D			
Q.14	Newton per coulomb is the SI unit of _____.			
Ans	A). magnetic field	B). magnetic potential	C). electric potential	D). electric field
	Correct Answer: D			
Q.15	Which of the following laws explains the relationship between the pressure and solubility of a gas in a liquid?			
Ans	A). Charles' Law	B). Raoult's Law	C). Avogadro's Law	D). Henry's Law
	Correct Answer: D			

Q.16 As per the Bohr's second postulate, the electrons can revolve around a nucleus in only those orbits for which the angular momentum is an integral multiple of _____.

- Ans A). $\frac{2h}{\pi}$ B). $\frac{2\pi}{h}$ C). $2\pi h$ D). $\frac{h}{2\pi}$

Correct Answer: D

Q.17 A solution turns blue litmus paper red. What does this indicate about the ions present in the solution?

- Ans A). The solution contains no ions at all. B). The solution contains equal amounts of H^+ and OH^- ions.
C). The solution contains more H^+ ions than OH^- ions. D). The solution contains more OH^- ions than H^+ ions.

Correct Answer: C

Q.18 Which method is used to separate iron-rich minerals like magnetite from unwanted materials?

- Ans A). Using a magnet to attract the mineral B). Using water to wash away lighter materials C). Using bubbles to lift the mineral
D). Dissolving the mineral in a liquid

Correct Answer: A

Q.19 Which of the following statements is NOT true regarding infrared waves?

- Ans A). They are used in physical therapy. B). These rays are also referred as heat waves.
C). They are help in maintaining the average temperature of the Earth. D). They have wavelength much less than 700 nm.

Correct Answer: D

Q.20 Identify whether the given statements are true or false.

Statement-I: The word 'stoichiometry' is derived from two Greek words — stoicheion (meaning, element) and metron (meaning, measure).

Statement-II: Stoichiometry, thus, deals with the calculation of masses (sometimes volumes also) of the reactants and the products involved in a chemical reaction.

- Ans A). Statement-I is false but Statement-II is true. B). Both the statements are false. C). Statement-I is true but Statement-II is false.
D). Both the statements are true.

Correct Answer: D

Q.21 Select the molecules where all bonds are single covalent bonds from the given list.

O_2 , N_2 , CH_4 , CO_2 , NH_3

- Ans A). NH_3 and CH_4 B). O_2 and CH_4 C). CO_2 , CH_4 and NH_3 D). N_2 and NH_3

Correct Answer: A

Q.22 What will be the energy gained by an electron when it has been accelerated by a potential difference of 1 volt?

- Ans A). 1.602×10^{-16} J B). 1.602×10^{-19} J C). 1.602×10^{16} J D). 1.602×10^{19} J

Correct Answer: B

Q.23 Which of the following is a major source of pathogenic water pollution?

- Ans A). Industrial waste B). Heavy metals from factories C). Agricultural runoff D). Domestic sewage and animal excreta

Correct Answer: D

Q.24 Which of the following reactions is used for the industrial preparation of sodium hydroxide?

- Ans A). Heating sodium carbonate with calcium hydroxide B). Reaction of sodium with water C). Electrolysis of sodium chloride solution
D). Decomposition of sodium bicarbonate

Correct Answer: C

Q.25 Which of the following relations is correct for the actual frequency ν_0 and the apparent frequency ν of a sound wave as observed by a stationary observer when the source of sound wave is moving towards the observer with velocity ν_s ? Take the actual velocity of the sound wave in the medium as v .

- Ans A). $\nu = \nu_0 \left(1 + \frac{v}{v_s}\right)$ B). $\nu = \nu_0 \left(1 + \frac{v_s}{v}\right)$ C). $\nu_0 = \nu \left(1 + \frac{v_s}{v}\right)$ D). $\nu_0 = \nu \left(1 - \frac{v_s}{v}\right)$

Correct Answer: D

Q.26 Which of the following statements about washing soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$) are correct?

Statement 1: Washing soda is obtained from sodium hydroxide.

Statement 2: It is used to remove permanent hardness of water.

Statement 3: Washing soda is a hydrated salt.

Ans A). All statements are correct. B). Only Statements 1 and 3 are correct. C). Only Statements 1 and 2 are correct.
D). Only Statements 2 and 3 are correct.

Correct Answer: D

Q.27 Identify the **INCORRECT** pair from the following options.

Ans A). Cyclopropane - homocyclic B). Tetrahydrofuran - heterocyclic C). Aniline - aromatic D). Thiophene - homocyclic

Correct Answer: D

Q.28 A paper weight is kept on a tabletop. The mass of paper weight is 0.5 kg and its dimensions are 10 cm $\times$ 4 cm $\times$ 2 cm. Find the pressure exerted by the paper weight on the table top if it is made to lie on the table top with its sides of dimensions 10 cm $\times$ 2 cm. (Take $g = 9.8 \text{ m/s}^2$)

Ans A). 612.5 Nm^{-2} B). 2420 Nm^{-2} C). 2450 Nm^{-2} D). 49 Nm^{-2}

Correct Answer: C

Q.29 A body is projected with a velocity $\vec{u} = 3\hat{i} + 4\hat{j}$ with respect to ground. At the highest point of motion of the body, what will be the magnitude of the vertical component of the velocity.

Ans A). 4 m/s B). 0 m/s C). 5 m/s D). 3 m/s

Correct Answer: B

Q.30 Identify the correct option in which the heat required to warm a given substance does not depend.

Ans A). Change in temperature B). Atmospheric pressure C). Nature of the substance D). Mass of the substance

Correct Answer: B

Q.31 What is the nature of the magnetic field at the centre of a current-carrying circular loop?

Ans A). Straight lines B). Concentric circles C). Zig-zag pattern D). Radial lines

Correct Answer: A

Q.32 What will be the energy gained by an electron with charge $q = 1.6 \times 10^{-19} \text{ C}$, when accelerated through a potential difference (ΔV) = 1 volt?

Ans A). $1.6 \times 10^{19} \text{ J}$ B). $1.6 \times 10^{-19} \text{ J}$ C). 10^{-19} J D). 10^{19} J

Correct Answer: B

Q.33 Which of the following is the correct pair of a physical quantity and its SI unit?

Ans A). Force - dyne B). Power - kilowatt C). Pressure - Pascal D). Energy - ergs

Correct Answer: C

Q.34 The mass of a body is 'X' kg on the surface of the Earth. What will be the weight of this body (in newton) on the surface of the Earth? (Take the value of g on Earth as 10 m/s^2)

Ans A). $X/10$ B). X C). $X/5$ D). $10X$

Correct Answer: D

Q.35 The relation between displacement (X) of a particle and time (t) is given by the following equation: $X = At + Bt^2$. What will be the dimensions of A/B , if the equation is dimensionally correct?

Ans A). $[T]$ B). $[T^3]$ C). $[T^{-3}]$ D). $[T^{-1}]$

Correct Answer: A

Q.36 Beyond the breakdown voltage, the current in a Zener diode _____.

Ans A). changes by a large amount for a small change in voltage B). increases linearly with voltage C). is completely independent of voltage
D). remains constant with voltage

Correct Answer: A

Q.37 What determines the shape of a molecule like CH_4 ?

Ans A). The number of atoms in the molecule B). The overlap of atomic orbitals C). The temperature at which the molecule is formed
D). The ionisation energy of atoms

Correct Answer: B

Q.38 Which property is common to both mixtures and compounds?

Ans A). Made of two or more substances B). Fixed composition C). Physically separated into components D). Homogeneous nature

Correct Answer: A

Q.39 Why is it difficult to determine the exact position and velocity of an electron simultaneously?

- Ans A). Electrons move at extremely high speeds in all directions. B). Measuring one property affects the accuracy of the other.
C). Electrons do not follow the basic laws of physics. D). Electrons are very small and cannot be detected easily.

Correct Answer: B

Q.40 Which of the following is a real-life example of a neutralisation reaction?

- Ans A). Mixing salt in water to make a saline solution B). Adding baking soda to vinegar in a volcano experiment C). Dissolving sugar in tea
D). Heating lemon juice to concentrate its acidity

Correct Answer: B

Q.41 Which of the following equations correctly represents the Ampere's circuital law?

- Ans A). $\oint \vec{B} \cdot d\vec{l} = \frac{\mu_0}{I}$ B). $\oint \vec{B} \cdot d\vec{l} = \mu_0 I^2$ C). $\oint \vec{B} \cdot d\vec{l} = \mu_0 I$ D). $\oint \vec{B} \cdot d\vec{l} = 2 \mu_0 I$

Correct Answer: C

Q.42 According to Planck's quantum theory, energy is emitted or absorbed in:

- Ans A). random energy bursts B). discrete packets called quanta C). infinite energy levels D). continuous waves

Correct Answer: B

Q.43 Which of the following statement(s) is/are true regarding the boiling point of a liquid?

- (i) The temperature at which the liquid and the vapour states of the substance coexist is called its boiling point.
(ii) The temperature at which the liquid and the solid states of the substance coexist is called its boiling point.
(iii) The boiling point for water is 273 K.

- Ans A). Both (ii) and (iii) B). Both (i) and (iii) C). Only (i) D). Only (ii)

Correct Answer: C

Q.44 What is the principal quantum number (n) of the ground state of a hydrogen atom?

- Ans A). n = 1 B). n = 2 C). n = 3 D). n = 0

Correct Answer: A

Q.45 For all angles of incidence greater than the critical angle, the wave will undergo what is known as total internal reflection. Which of the following is the correct formula for the critical angle?

- (where $n_1 = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in first medium}}$ and $n_2 = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in second medium}}$ and n_1 is greater than n_2)

- Ans A). $\sin i_c = \frac{n_2}{n_1}$ B). $\tan i_c = \frac{n_2}{n_1}$ C). $\tan i_c = \frac{n_1}{n_2}$ D). $\sin i_c = \frac{n_1}{n_2}$

Correct Answer: A

Q.46 Which of following statement(s) is/are true?

- i. A mixture contains particles of two or more pure substances, which may be present in it in any ratio.
ii. Sugar solution and air are the examples of homogeneous mixtures.
iii. Mixtures of salt and sugar, grains and pulses along with some dirt (often stones), are heterogeneous mixtures.

- Ans A). i, ii and iii B). ii and iii only C). i and iii only D). i and ii only

Correct Answer: A

Q.47 What is the ratio of the total energy of the second excited state to that of the third excited state in a hydrogen atom?

- Ans A). 9/16 B). 9/4 C). 16/9 D). 4/9

Correct Answer: C

Q.48 The corrosion of silver, copper and iron articles will produce _____, respectively.

- Ans A). silver sulphide, copper sulphide and iron oxide B). silver carbonate, copper carbonate and iron oxide
C). silver oxide, copper carbonate and iron carbonate D). silver sulphide, copper carbonate and iron oxide

Correct Answer: D

Q.49 A packet of potato chips contains nitrogen gas. Why is nitrogen gas used instead of oxygen?

- Ans A). Nitrogen enhances the taste of chips. B). Nitrogen prevents oxidation and rancidity. C). Oxygen is toxic for packaged food.
D). Nitrogen is lighter than oxygen.

Correct Answer: B

Q.50 Which of the following statements is **INCORRECT** regarding the structure of benzene?

- Ans A). It has six carbon-hydrogen single bonds. B). It has six carbon-carbon single bonds.
C). It has six carbon atoms in a ring, each bonded to one hydrogen atom. D). It is an unsaturated cyclic hydrocarbon.

Correct Answer: B

Q.51 Zinc is extracted from zinc sulphide (ZnS) by first converting it into zinc oxide (ZnO). This is done by:

- Ans A). dissolving ZnS in acid B). direct electrolysis of ZnS C). heating ZnS in the absence of air D). heating ZnS in the presence of air

Correct Answer: D

Q.52 A _____ pitch sound corresponds to more number of compressions and rarefactions passing a fixed point per unit time.

- Ans A). low B). high and low C). high D). zero

Correct Answer: C

Q.53 What is the correct name and function of the device represented by the given symbol?



- Ans A). Ammeter; used for measuring current flowing through a circuit. B). Rheostat; used for varying the current flowing through a circuit.
C). Switch; used for connecting and disconnecting the circuit. D). Battery; used for providing potential difference.

Correct Answer: B

Q.54 The earth's crust has only _____ carbon in the form of minerals (like carbonates, hydrogen carbonates, coal and petroleum).

- Ans A). 2% B). 0.2% C). 20% D). 0.02%

Correct Answer: D

Q.55 Which of the following statements is/are true?

- i. In elements, in the free or the uncombined state, each atom bears an oxidation number of zero.
ii. For ions composed of only one atom, the oxidation number is equal to the charge on the ion.
iii. In all its compounds, fluorine has an oxidation number of -1.
iv. The algebraic sum of the oxidation number of all the atoms in a compound must be zero.

- Ans A). Only i and ii B). Only i, iii and iv C). i, ii, iii and iv D). Only i, ii and iii

Correct Answer: C

Q.56 What will be the conventional direction of electric current flowing through an electric circuit?

- Ans A). Does not depend on the direction of the flow of electrons B). Perpendicular to the direction of the flow of electrons
C). In the direction of the flow of electrons D). Opposite to the direction of the flow of electrons

Correct Answer: D

Q.57 Which property of nylon makes it suitable for making ropes and fibres?

- Ans A). High tensile strength B). Low melting point C). High water absorption D). Brittle nature

Correct Answer: A

Q.58 Identify whether the given statements are true or false.

Statement-I: An H-bond in case of HF molecule, alcohol or water molecules is an intermolecular hydrogen bond.

Statement-II: There is an intramolecular hydrogen bonding in an o-nitrophenol molecule.

- Ans A). Statement-I is true but Statement-II is false. B). Both the statements are true. C). Statement-I is false but Statement-II is true.
D). Both the statements are false.

Correct Answer: B

Q.59 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: Many metals, such as copper, zinc, tin, nickel, silver and gold, are refined electrolytically.

Statement II: In Electrolytic Refining, the impure metal is made the anode and a thin strip of pure metal is made the cathode.

Ans A). Both Statements I and II are true. B). Statement I is true but Statement II is false. C). Statement I is false but Statement II is true.
D). Both Statements I and II are false.

Correct Answer: A

Q.60 A car is moving in a straight line from city A to city B then city C. Let the distance between city A to B is 240 km and between city A and C is 320 km. The car moves from A to C in 6 hrs and back to B from C in 2 hrs. What will be the average velocity of the car?

Ans A). 30 km/hr B). 40 km/hr C). 53.66 km/hr D). 50 km/hr

Correct Answer: A

Q.61 What does the pattern formed by iron filings around a magnet demonstrate?

Ans A). The presence of an electric field around the magnet B). The effect of friction on iron filings C). The presence of gravitational force
D). The presence of a magnetic field around the magnet

Correct Answer: D

Q.62 Which of the following equations correctly defines the input resistance of the common emitter junction transistor?

Ans A). $r_i = \frac{\Delta V_{CE}}{\Delta I_E}$ at constant V_{BE} B). $r_i = \frac{\Delta V_{CE}}{\Delta I_B}$ at constant V_{BE} C). $r_i = \frac{\Delta V_{BE}}{\Delta I_B}$ at constant V_{CE}
D). $r_i = \frac{\Delta V_{BE}}{\Delta I_E}$ at constant V_{CE}

Correct Answer: C

Q.63 Which of the following properties are usually shown by metals?

- i. They have a lustre (shine).
- ii. They conduct heat and electricity.
- iii. They are malleable (can be hammered into thin sheets).

Ans A). i and iii only B). i and ii only C). ii and iii only D). i, ii and iii

Correct Answer: D

Q.64 Rahul stirs a spoonful of salt into a glass of water. After a while, he notices that the salt is no longer visible. What type of mixture has he created?

Ans A). Homogeneous mixture B). Suspension C). Colloid D). Heterogeneous mixture

Correct Answer: A

Q.65 Two isotopes, A and B, are present in a chlorine sample with 75% and 25% abundances, respectively. Their average atomic mass is 35.5 u, and the sum of their nucleons is 72. What are the number of nucleons in A and B, respectively?

Ans A). 38 and 34 B). 34 and 38 C). 35 and 37 D). 37 and 35

Correct Answer: C

Q.66 The metals high up in the reactivity series are very reactive. These metals are obtained by _____.

Ans A). electrolytic reduction B). heating with carbon C). heating in air D). heating in absence of air

Correct Answer: A

Q.67 20 g of ice cubes at 0°C are put in 60 g of water in a tumbler. If the initial temperature of water is 40°C, then what will be the final temperature of water, assuming that no heat is lost to the surroundings?

(Take: Latent heat of ice = 80 cal/g; Specific heat capacity of water = 1 cal/g°C)

Ans A). 10°C B). 50°C C). 100°C D). 20°C

Correct Answer: A

Q.68 Which of the following is a physical intensive property?

Ans A). Volume B). Energy C). Density D). Mass

Correct Answer: C

Q.69 What happens to the impurities during the electrolytic refining of copper?

Ans A). They dissolve in the electrolyte. B). They settle as anode mud. C). They evaporate as gas. D). They deposit on the cathode.

Correct Answer: B

Q.70 Which of the following is the simplest ketose?

Ans A). Dihydroxyacetone B). Glyceraldehyde C). Xylose D). Erythrose

Correct Answer: A

Q.71 In the chlor-alkali process, _____ is given off at the anode, and _____ at the cathode.

Ans A). chlorine gas, oxygen gas B). chlorine gas, hydrogen gas C). oxygen gas, hydrogen gas D). chlorine gas, water vapour

Correct Answer: B

Q.72 How does electronegativity generally vary in the periodic table?

Ans A). It increases down a group and increases across a period. B). It decreases down a group and increases across a period.
C). It increases down a group and decreases across a period. D). It decreases down a group and decreases across a period.

Correct Answer: B

Q.73 When an electric current is passed through a metallic conductor, a nearby compass needle gets deflected. What is the reason for this deflection?

Ans A). The electric current creates an electric field that repels the needle. B). The conductor gains magnetic properties due to heating.
C). The electric current generates a magnetic field around the conductor, influencing the needle.
D). The electric current produces heat in the conductor, affecting the needle.

Correct Answer: C

Q.74 Which of the following metals does NOT occur in nature in a free state?

Ans A). Silver B). Platinum C). Gold D). Aluminium

Correct Answer: D

Q.75 Which of the following statement(s) is/are true regarding the production and propagation of sound waves?

- (i) Sound is produced by vibrating objects.
(ii) Sound waves do not require a material medium for their propagation.
(iii) Sound waves fall in the category of non-mechanical waves.

Ans A). Both (ii) and (iii) B). Only (ii) C). Only (i) D). Both (i) and (iii)

Correct Answer: C

Q.76 Which of the following are physical properties?

- i. Melting point
ii. Hardness
iii. Density
iv. Fluidity

Ans A). i and ii only B). i, ii and iii only C). i, iii and iv only D). i, ii, iii and iv

Correct Answer: D

Q.77 The binding energy of a nucleus gives a _____ contribution to the mass of the nucleus.

Ans A). negligible B). zero C). negative D). positive

Correct Answer: C

Q.78 Which of the following sets of quantum numbers (n , l , m_l , m_s) is NOT allowed for an electron in an atom?

Ans A). (2, 1, -1, -1/2) B). (4, 3, -4, +1/2) C). (5, 2, 0, -1/2) D). (3, 2, 1, +1/2)

Correct Answer: B

Q.79 Which of the following is/are the use(s) of washing soda?

- i. Sodium carbonate (washing soda) is used in glass, soap, and paper industries.
ii. It is used in the manufacture of sodium compounds such as borax.

Ans A). Neither i nor ii B). ii only C). Both i and ii D). i only

Correct Answer: C

Q.80	In which of the following materials is the energy gap (E_g) between the top of the valence band and bottom of the conduction band is between greater than 0.5 eV and less than 3 eV?			
Ans	A). Insulators	B). Semiconductors	C). Conductors	D). Superconductors
Correct Answer: B				
Q.81	If a liquid of density ρ and coefficient of viscosity η flow with a velocity v through a pipe of diameter D , then the Reynold's number is X . If the velocity of the liquid flowing through the pipe increases to $2v$ and the diameter of the pipe is reduced to $D/4$ (keeping all the other parameters the same), the new Reynold's number is Y . What will be the value of $X : Y$?			
Ans	A). 1 : 4	B). 4 : 1	C). 1 : 2	D). 2 : 1
Correct Answer: D				
Q.82	Identify the INCORRECT pair from the given options.			
Ans	A). Three-carbon chain with a ketone group - Propanone	B). Alkane having three carbon atoms - Propane	C). Alcohol - Propanol	D). Aldehyde - Propanone
Correct Answer: D				
Q.83	The melting point of a substance at standard atmospheric pressure is called it's _____.			
Ans	A). thermal equilibrium point	B). standard freezing point	C). normal melting point	D). absolute melting point
Correct Answer: C				
Q.84	Why is metal refining important?			
Ans	A). To make metals heavier	B). To remove unwanted impurities and obtain pure metal	C). To convert metal oxides into metals	D). To increase impurities in metals
Correct Answer: B				
Q.85	What happens to the pH when a strong acid reacts with a strong base?			
Ans	A). It becomes 7.	B). It becomes 1.	C). It becomes 14.	D). It remains unchanged.
Correct Answer: A				
Q.86	If the pressure of an ideal gas is doubled and its volume is halved at constant temperature, what happens to the number of moles (n)?			
Ans	A). It doubles.	B). It becomes zero.	C). It becomes half.	D). It remains the same.
Correct Answer: D				
Q.87	Which of the following represents the correct electronic configuration of Chromium ($Z = 24$)?			
Ans	A). $[\text{Ar}] 3d^3 4s^3$	B). $[\text{Ar}] 3d^4 4s^2$	C). $[\text{Ar}] 3d^6 4s^0$	D). $[\text{Ar}] 3d^5 4s^1$
Correct Answer: D				
Q.88	Select the option that is correct regarding the following two statements labelled Assertion (A) and Reason (R). Assertion: The magnetic field lines do not form closed loops. Reason: Magnetic field lines can never intersect.			
Ans	A). Assertion is true but reason is false.	B). Both assertion and reason are true and reason is the correct explanation of assertion.	C). Both assertion and reason are false.	D). Assertion is false but reason is true.
Correct Answer: D				
Q.89	A potential difference (V) is applied for time (t) across the heating element of an electric geyser having a resistance (R). Which of the following is the correct relation between heat produced (H) in the geyser coil in terms of V , t , and R ?			
Ans	A). $H = \left(\frac{V^2}{R}\right)t$	B). $H = VRt$	C). $H = \frac{VR}{t}$	D). $H = \left(\frac{V^2 R}{t}\right)$
Correct Answer: A				
Q.90	The mass number of a nucleus is X , while its atomic number is Y . What will be the number of neutrons and protons, respectively, in the nucleus?			
Ans	A). $(X + Y)$ and X	B). Y and $(X - Y)$	C). X and $(X + Y)$	D). $(X - Y)$ and Y
Correct Answer: D				
Q.91	Which of the following is NOT an example of forced convection?			
Ans	A). Forced-air heating systems	B). Human circulatory system	C). Cooling system of an automobile engine	D). Heating up of ground more quickly than large bodies of water
Correct Answer: D				

Q.92 Which of the following statements is/are true?

- i. The covalent bond may be classified into two types depending upon the types of overlapping: (i) Sigma(σ) bond and (ii) pi(π) bond
- ii. Basically, the strength of a bond depends upon the extent of overlapping.
- iii. In case of sigma bond, the overlapping of orbitals takes place to a larger extent. Hence, it is stronger compared to the pi bond where the extent of overlapping occurs to a smaller extent.

Ans A). Only ii and iii B). Only i and iii C). Only i and ii D). i, ii and iii

Correct Answer: D

Q.93 Why was DDT widely used after World War II?

Ans A). It acted as a natural fertiliser. B). It helped control malaria and insect-borne diseases. C). It increased soil fertility.
D). It was biodegradable and eco-friendly.

Correct Answer: B

Q.94 A medium has an absolute refractive index of $\sqrt{3}$. What will be the polarising angle for this medium?

Ans A). 60° B). 0° C). 45° D). 30°

Correct Answer: A

Q.95 What did Rutherford's experiment prove about the structure of the atom?

Ans A). Atoms do not contain any empty space. B). Atoms have a dense, positively charged nucleus. C). Atoms are made only of electrons.
D). Atoms are solid throughout.

Correct Answer: B

Q.96 What does BJT stand for?

Ans A). Base Junction Transistor B). Binary Junction Transistor C). Bipolar Junction Transistor D). Bi-layer Junction Transistor

Correct Answer: C

Q.97 Which of the following statements is true about the reactivity series of metals?

Ans A). It is a list of metals arranged in order of their decreasing atomic numbers.
B). It is a list of metals arranged in order of their decreasing reactivity. C). It is a list of metals arranged in order of their increasing reactivity.
D). It is a list of metals arranged in order of their increasing atomic masses.

Correct Answer: B

Q.98 Identify the INCORRECT pair from the given options.

Ans A). Alkenes - Contain one or more double bonds B). Hydrocarbon - Carbon and hydrogen C). Alkanes - Unsaturated hydrocarbons
D). Alkynes - Contain one or more triple bonds

Correct Answer: C

Q.99 On heating gypsum at 373 K, it loses water molecules and becomes _____, called Plaster of Paris.

Ans A). calcium sulphate hemihydrate B). calcium sulphate dihydrate C). calcium sulphate D). calcium sulphate trihydrate

Correct Answer: A

Q.100 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: p-Block Elements comprise those belonging to Group 13 to 18 of the modern periodic table.

Statement II: p-Block Elements, together with the s-Block Elements, are called the Representative Elements or Main Group Elements.

Ans A). Both Statements I and II are false. B). Statement I is true but Statement II is false. C). Statement I is false but Statement II is true.
D). Both Statements I and II are true.

Correct Answer: D



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Maths By Gagan Pratap Sir



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 CMA

* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Q.1 If the absolute refractive index of a medium is less than 1, it means _____.

Ans A). light travels slower in that medium than in vacuum B). the medium absorbs all light C). the medium is a perfect reflector
D). light travels faster in that medium than in vacuum

Correct Answer: D

Q.2 The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?

Ans A). 2014 B). 2015 C). 2005 D). 2008

Correct Answer: B

Q.3 Which of the following is NOT toxic to non-target organisms in the soil?

Ans A). Fungicides B). Organic fertilisers C). Pesticides D). Herbicides

Correct Answer: B

Q.4 What is the net force acting on an object if balanced forces are applied?

Ans A). Infinite B). Equal to acceleration C). Equal to the mass of the object D). Zero

Correct Answer: D

Q.5 If an object is dropped from rest, what will be its velocity after 15 seconds? ($g = 9.8 \text{ m/s}^2$)

Ans A). 143 m/s B). 145 m/s C). 147 m/s D). 149 m/s

Correct Answer: C

Q.6 Which of the following states is NOT covered under the Atal Bhujal Yojana?

Ans A). Maharashtra B). Jharkhand C). Uttar Pradesh D). Rajasthan

Correct Answer: B

Q.7 In which of the following regions the Himalayas has the greatest width?

Ans A). Arunachal Pradesh B). Kashmir C). Sikkim D). Himachal Pradesh

Correct Answer: B

Q.8 Who among the following inaugurated the 38th National Games held in Dehradun in January 2025?

Ans A). Pushkar Singh Dhami B). Narendra Modi C). Anurag Thakur D). Droupadi Murmu

Correct Answer: B

Q.9 Which of the following is NOT a component of a CPU?

Ans A). Hard Disk B). Arithmetic Logic Unit (ALU) C). Control Unit (CU) D). Cache Memory

Correct Answer: A

Q.10	Which of the following is NOT a source of release of smokestacks?			
Ans	A). Smelters	B). Industries	C). Thermal power plants	D). Rivers Correct Answer: D
Q.11	Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?			
Ans	A). Article 53	B). Article 78	C). Article 88	D). Article 77 Correct Answer: C
Q.12	Which of the following correctly explains why clothes dry faster on a windy day?			
Ans	A). Wind removes the water vapour from the clothes' surroundings. B). Wind decreases the temperature of the water molecules. C). Wind increases the humidity around the clothes. D). Wind reduces the surface area of the clothes. Correct Answer: A			
Q.13	What is the primary purpose of using a firewall on a Personal Computer?			
Ans	A). To block unauthorised access and protect the computer B). To clean up temporary files C). To speed up internet connectivity D). To increase storage space Correct Answer: A			
Q.14	Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?			
Ans	A). $\text{Al}_3(\text{SO}_4)_2$	B). Al_2SO_4	C). $\text{Al}(\text{SO}_4)_3$	D). $\text{Al}_2(\text{SO}_4)_3$ Correct Answer: D
Q.15	According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?			
Ans	A). 25.7%	B). 20%	C). 27.5%	D). 15.5% Correct Answer: A
Q.16	Inertia depends on which property of an object?			
Ans	A). Acceleration	B). Velocity	C). Shape	D). Mass Correct Answer: D
Q.17	What happens when an acid reacts with a metal oxide?			
Ans	A). A salt and water are formed. B). A salt and hydrogen gas are formed. C). Only water is formed. D). Only salt is formed. Correct Answer: A			
Q.18	Which official in the Gupta administration was responsible for peace and war matters?			
Ans	A). Sandhi-Vigrahika	B). Mahadandanayaka	C). Vishayapati	D). Mahapratihara Correct Answer: A
Q.19	Which defect of vision occurs due to the weakening of ciliary muscles with age?			
Ans	A). Myopia	B). Astigmatism	C). Presbyopia	D). Hypermetropia Correct Answer: C
Q.20	What is the purpose of the Collation option in the Print settings?			
Ans	A). To print all the pages of a document as a set B). To change the printer selection C). To adjust the page orientation D). To select a custom print range Correct Answer: A			
Q.21	What is the first step to securing ones smartphone or tablet?			
Ans	A). Using only free Wi-Fi networks B). Turning off mobile data C). Installing more apps D). Setting a password/PIN-protected lock screen Correct Answer: D			
Q.22	Which of the following is a characteristic difference between colloids and true solutions?			
Ans	A). True solutions have visible solute particles, whereas colloids have invisible dispersed particles. B). True solutions exhibit Brownian motion, but colloids do not. C). True solutions show the Tyndall effect, but colloids do not. D). True solutions have a single-phase system, whereas colloids have a two-phase system. Correct Answer: D			
Q.23	What happens when a computer is put into Sleep mode?			
Ans	A). It restarts automatically after a few minutes. B). It shuts down completely. C). It stores data on the hard drive and powers off. D). It keeps the session active in RAM while using minimal power. Correct Answer: D			

Q.24	The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is _____.			
Ans	A). nitrate	B). phosphate	C). bacterium	D). chloride
Correct Answer: C				
Q.25	The Industrial Policy Resolution of 1956 categorised industries into how many groups?			
Ans	A). Seven	B). Five	C). Nine	D). Three
Correct Answer: D				
Q.26	What was the main objective of the Extremists during the Indian National Movement?			
Ans	A). To bring social reforms	B). To expand the legislative councils	C). To promote British goods in India	
	D). To attain complete independence (Swaraj)			Correct Answer: D
Q.27	Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?			
Ans	A). Google	B). Amazon	C). Meta	D). Microsoft
Correct Answer: C				
Q.28	The main use of chlorofluorocarbons is in _____.			
Ans	A). smog	B). vehicles	C). chimneys	D). refrigerants
Correct Answer: D				
Q.29	What is the approximate pH of a neutral salt solution?			
Ans	A). Equal to 7	B). Depends on the temperature	C). Less than 7	D). More than 7
Correct Answer: A				
Q.30	In an electric circuit, what is the correct way to connect an ammeter?			
Ans	A). In parallel with the source	B). In parallel with the component	C). In series with the component	D). In either series or parallel
Correct Answer: C				
Q.31	The fine powder that is obtained from the modified and recycled form of plastic is called _____.			
Ans	A). polyblend	B). polythene	C). polyethylene	D). polystyrene
Correct Answer: A				
Q.32	The energy that is derived from the use of radioactive isotopes is termed as _____.			
Ans	A). solar energy	B). thermal energy	C). geothermal energy	D). nuclear energy
Correct Answer: D				
Q.33	What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?			
Ans	A). Repeats the last action	B). Toggles between absolute and relative references	C). Opens the Find and Replace dialog	
	D). Refreshes the worksheet			Correct Answer: B
Q.34	Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?			
Ans	A). New Delhi	B). Kolkata	C). Chennai	D). Mumbai
Correct Answer: A				
Q.35	Which of the following is the correct way to insert a new column in a spreadsheet?			
Ans	A). Go to Home > Insert > Insert Sheet Columns.	B). Press Ctrl + X and then Insert.	C). Use Ctrl + Z to insert a column.	
	D). Go to File > New > Column.			Correct Answer: A
Q.36	The maximum sound is generated _____.			
Ans	A). from industrial smoke	B). from house chimneys	C). by the take off of a jet plane	D). from vehicular emissions
Correct Answer: C				
Q.37	If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the _____ field.			
Ans	A). To	B). Cc	C). Bcc	D). Subject
Correct Answer: B				
Q.38	The glass panel used in greenhouses is known to retain _____.			
Ans	A). pH	B). heat	C). humidity	D). rainfall
Correct Answer: B				

Q.39	The practice of Jhum cultivation is prevalent in the _____.				
Ans	A). North west	B). South west	C). South east	D). North east	Correct Answer: D
Q.40	What is the shortcut key to start a slideshow from the beginning?				
Ans	A). Ctrl + P	B). Alt + Tab	C). Shift + F5	D). F5	Correct Answer: D
Q.41	The Rudra Veena is predominantly associated with which genre of Hindustani music?				
Ans	A). Khayal	B). Dhrupad	C). Thumri	D). Ghazal	Correct Answer: B
Q.42	Which state of matter shows the highest expansion when temperature is increased?				
Ans	A). Liquids	B). Solids	C). Plasma	D). Gases	Correct Answer: D
Q.43	Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?				
Ans	A). Fundamental Duties	B). Fundamental Rights	C). Preamble	D). Directive Principles of State Policy	Correct Answer: D
Q.44	Which of the following CANNOT be considered as a measure to control global warming?				
Ans	A). Efficiently using energy B). Reduction in emission of greenhouse gases C). Causing deforestation D). Cutting down use of fossil fuel				Correct Answer: C
Q.45	What is India's global military ranking in the 2025 Global Firepower (GFP) index?				
Ans	A). 3 rd	B). 5 th	C). 2 nd	D). 4 th	Correct Answer: D
Q.46	Identify the correct formula for the compound formed between Mg^{2+} and PO_4^{3-} ions.				
Ans	A). $Mg_2(PO_4)_3$	B). $Mg_3(PO_4)_2$	C). $Mg(PO_4)_3$	D). $MgPO_4$	Correct Answer: B
Q.47	What does PCB stand for?				
Ans	A). Processing Circuit Board	B). Printed Circuit Board	C). Peripheral Connection Bus	D). Primary Control Board	Correct Answer: B
Q.48	Why does a bee sting cause pain and irritation?				
Ans	A). The sting injects a mild sugar solution. B). The sting contains a strong base. C). The sting injects methanoic acid. D). The sting releases carbon dioxide gas.				Correct Answer: C
Q.49	What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91 st Amendment Act?				
Ans	A). 10% of Lok Sabha strength B). 15% of Lok Sabha strength C). 20% of Lok Sabha strength D). 12% of Lok Sabha strength				Correct Answer: B
Q.50	The phenomenon of multiple echoes due to repeated reflections is called _____.				
Ans	A). diffraction	B). resonance	C). refraction	D). reverberation	Correct Answer: D

Q.1	A neutralisation reaction occurs when _____ react with each other.				
Ans	A). salt and water	B). two acids	C). an acid and a base	D). two bases	Correct Answer: C

Q.2	Read the given two statements and select the correct option.				
	Statement-I: At constant volume, pressure of a fixed amount of gas varies directly with the temperature.				
	Statement-II: Each line of pressure vs temperature (Kelvin) graph at constant molar volume is called isochore.				
Ans	A). Both Statement-I and Statement-II are false. B). Statement-I is true but Statement-II is false. C). Statement-I is false but Statement-II is true. D). Both Statement-I and Statement-II are true.				
	Correct Answer: D				

Q.3 Which of the following statement(s) is/are true?

- i. The study of emission or absorption spectra is referred to as spectroscopy.
- ii. The spectrum of radiation emitted by a substance that has absorbed energy is called an emission spectrum.
- iii. The element helium (He) was discovered in the sun by a spectroscopic method.

Ans A). ii only B). i only C). iii only D). i, ii and iii

Correct Answer: D

Q.4 Which of the following correctly describes the trend of ionic radius across a period?

Ans A). Ionic radius increases from left to right across a period. B). Cations decrease in size and anions increase in size across a period.
C). Ionic radius increases uniformly across a period. D). Ionic radius remains the same for all elements in a period.

Correct Answer: B

Q.5 In the reaction, $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$, which substance is oxidised?

Ans A). Copper Oxide (CuO) B). Oxygen (O₂) C). Copper (Cu) D). Both Cu and O₂

Correct Answer: C

Q.6 Which of the following green chemistry strategies is used to minimise solvent waste?

Ans A). Using excess petroleum-based solvents B). Increasing the number of solvents used in reactions
C). Using water as a solvent in reactions D). Disposing of solvents after a single use

Correct Answer: C

Q.7 Which of the following statements is NOT correct in reference to the melting point?

Ans A). The temperature at which the liquid and the gaseous states of the substance are in thermal equilibrium with each other is called its melting point.
B). The temperature at which the solid and the liquid states of the substance are in thermal equilibrium with each other is called its melting point.
C). Melting point also depends on pressure. D). The melting point is characteristic of the substance.

Correct Answer: A

Q.8 Which of the following is the correct definition of the electric potential due to a positive charge Q at a point r from it?

Ans A). $V = \frac{Q}{4\pi\epsilon r^2}$ B). $V = \frac{Q}{4\pi\epsilon r^3}$ C). $V = -\frac{Q}{4\pi\epsilon r}$ D). $V = \frac{Q}{4\pi\epsilon r}$

Correct Answer: D

Q.9 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: Properties of a compound are different from those of its constituent elements, whereas a mixture shows the properties of its constituting elements or compounds.

Statement II: The constituents of a mixture can be separated fairly easily by physical methods, whereas the constituents of a compound can be separated only by chemical or electrochemical reactions.

Ans A). Both Statements I and II are true. B). Both Statements I and II are false. C). Statement I is false but Statement II is true.
D). Statement I is true but Statement II is false.

Correct Answer: A

Q.10 The phenomenon of perfect diamagnetism in superconductors is known as:

Ans A). ferromagnetic effect B). Biot-Savart Law C). electromagnetic effect D). Meissner effect

Correct Answer: D

Q.11 The voltmeter is always connected _____ across the points between which the potential difference is to be measured.

Ans A). in any random manner B). in parallel C). at an angle to the circuit D). in series

Correct Answer: B

Q.12 Consider that a nucleus with A = 240 is breaking into two fragments each of A = 120. What will be the total gain in binding energy, if binding energy per nucleon (E_{bn}) for A = 240 nucleus is about 7.6 MeV and for the two A = 120 fragment nuclei is about 8.5 MeV?

Ans A). 216 MeV B). 204 MeV C). 182.4 MeV D). 240 MeV

Correct Answer: A

Q.13 In which of the following mediums is the speed of sound maximum at 25°C?

Ans A). Vacuum B). Gases C). Solids D). Liquids

Correct Answer: C

Q.14 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: A reaction in which a single product is formed from two or more reactants is known as a combination reaction.

Statement II: Calcium oxide reacts vigorously with water to produce slaked lime (calcium hydroxide); this is a combination reaction.

Ans A). Both Statements I and II are true. B). Statement I is true but Statement II is false. C). Both Statements I and II are false.
D). Statement I is false but Statement II is true.

Correct Answer: A

Q.15 According to Henry's law, the solubility of a gas in a liquid is directly proportional to which factor?

Ans A). Partial pressure of the gas B). Volume of the gas C). Density of the liquid D). Temperature of the liquid

Correct Answer: A

Q.16 In Young's double-slit experiment (using two coherent sources of the same intensity), the resultant intensity at a point on the screen is X, when the path difference is $\lambda/3$ (λ being the wavelength of light used). What will be the ratio of X and Y, where Y is the maximum resultant intensity?

Ans A). $4/3$ B). $1/4$ C). $1/2$ D). $3/4$

Correct Answer: B

Q.17 Why does hydrogen fluoride (HF) form stronger hydrogen bonds than water (H_2O) even though water has more hydrogen bonding sites?

Ans A). Water has a symmetrical structure that reduces hydrogen bonding strength.
B). Fluorine is the most electronegative element, creating a stronger dipole.
C). The H–F bond is weaker than the H–O bond, allowing better hydrogen bonding.
D). HF has a lower molecular mass, making it more reactive.

Correct Answer: B

Q.18 What does the principal quantum number (n) determine?

Ans A). Size and energy of the orbital B). Charge of the nucleus C). Orientation of the orbital D). Shape of the orbital

Correct Answer: A

Q.19 The formation of magnesium oxide (MgO) from magnesium and oxygen is a/an _____ reaction.

Ans A). combination B). endothermic C). displacement D). neutralisation

Correct Answer: A

Q.20 The products of the reaction between ethanoic acid and carbonates and hydrogen carbonates are:

Ans A). sodium acetate, carbon monoxide and water B). sodium acetate, carbon dioxide and water
C). sodium acetate, carbon dioxide and hydrogen gas D). ethanol, carbon dioxide and water

Correct Answer: B

Q.21 An alternating current source is applied across a full-wave rectifier. Which of the following will be true regarding the output obtained?

Ans A). The output will be alternating current. B). The output will be initially direct current and then alternating current.
C). The output will be initially alternating current and then direct current. D). The output will be pulsating direct current.

Correct Answer: D

Q.22 Which of the following is/are used as olfactory indicators?

- i. Vanilla
- ii. Onion
- iii. Clove

Ans A). All i, ii, and iii B). i and ii only C). i only D). i and iii only

Correct Answer: A

Q.23 Which of the following ions is present in washing soda?

Ans A). Nitrate ion B). Carbonate ion C). Sulphate ion D). Chloride ion

Correct Answer: B

Q.24 If the height of the image is 2 times the height of the object, then the linear magnification is _____.

Ans A). $1/2$ B). 0.75 C). 1 D). 2

Correct Answer: D

Q.25 Which of the following monomers is used in the production of polythene?

Ans A). Ethene B). Propene C). Vinyl chloride D). Styrene

Correct Answer: A

Q.26 What will be the shape of the magnetic field lines inside a current carrying solenoid?

Ans A). Straight but not parallel B). Circular and parallel C). No field lines exists inside the solenoid D). Parallel and straight **Correct Answer: D**

Q.27 The radioactive decay constant (in the law of radioactive decay) is also called _____.

Ans A). half-life coefficient B). activity constant C). nuclear stability factor D). disintegration constant **Correct Answer: D**

Q.28 Which of the following SI units is INCORRECTLY matched with its physical quantity?

Ans A). Electric charge – Coulomb (C) B). Power – Watt (W) C). Pressure – Newton per metre (N/m) D). Work – Joule (J) **Correct Answer: C**

Q.29 Which of the following is the correct relation between the coefficient of linear expansion (α_L) and the coefficient of volumetric expansion (α_V)?

Ans A). $\alpha_L = \frac{\alpha_V}{2}$ B). $\alpha_L = 2\alpha_V$ C). $\alpha_L = \frac{\alpha_V}{3}$ D). $\alpha_L = 3\alpha_V$ **Correct Answer: C**

Q.30 Which of the following environmental benefits is associated with using ethanol as a fuel?

Ans A). Reduces deforestation B). Increases fossil fuel reserves C). Lowers greenhouse gas emissions D). Enhances soil fertility

Correct Answer: C

Q.31 What is/are collected as anode mud during electrolytic refining?

Ans A). Pure metal B). Impurities C). Hydrogen gas D). Electrolyte solution **Correct Answer: B**

Q.32 Which of the following everyday activities is a chemical change?

Ans A). Dissolving sugar in water B). Breaking a pencil C). Cooking an egg D). Cutting an apple **Correct Answer: C**

Q.33 A student mixed lead(II) nitrate solution with potassium iodide solution. What was observed?

Ans A). Evolution of hydrogen gas B). No visible change C). Formation of a yellow precipitate D). Change in colour to green **Correct Answer: C**

Q.34 A car moves along a circular track of radius 50 m with a speed of 10 m/s. What is its centripetal acceleration?

Ans A). 4 m/s² B). 2 m/s² C). 5 m/s² D). 10 m/s² **Correct Answer: B**

Q.35 Which of the following statements is true for a solenoid?

Ans A). A solenoid is commonly used to obtain a uniform magnetic field.
B). A solenoid is commonly used to obtain a non-uniform magnetic field. C). A solenoid is commonly used to obtain a non-uniform electric field.
D). A solenoid is commonly used to obtain a uniform electric field.

Correct Answer: A

Q.36 If the pressure of a gas is doubled while keeping the temperature constant, what happens to its volume?

Ans A). It remains the same B). It becomes four times C). It becomes half D). It doubles **Correct Answer: C**

Q.37 Which of the following options is INCORRECT in reference to a ferromagnetic substance?

Ans A). In a ferromagnetic material, the field lines are highly concentrated.
B). In hard ferromagnetic, the magnetisation persists on removal of the external field.
C). In soft ferromagnetic, the magnetisation disappears on removal of the external field.
D). The ferromagnetic property is independent of the temperature.

Correct Answer: D

Q.38 Consider the two vectors, vector A of magnitude 4 units and vector B of magnitude 5 units. If the angle between the two vectors is 60°, then find the scalar product of vector A and vector B.

Ans A). $10\sqrt{3}$ B). 30 C). 10 D). 0 **Correct Answer: C**

Q.39 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: All bases do not dissolve in water.

Statement II: Bases that are soluble in water are called alkalis.

- Ans A). Both Statements I and II are false. B). Statement I is true but Statement II is false. C). Both Statements I and II are true.
D). Statement I is false but Statement II is true.

Correct Answer: C

Q.40 Some solute particles in a solution collide with the solid solute particles and get separated out of the solution. This process is known as ____.

- Ans A). association B). dissociation C). dissolution D). crystallisation

Correct Answer: D

Q.41 Which of the following statements is/are true?

- i. Polyesters are the polycondensation products of dicarboxylic acids and diols.
ii. Dacron or terylene is the best known example of polyesters.
iii. Dacron fibre (terylene) is crease resistant and is used in blending with cotton and wool fibres and also as glass reinforcing materials in safety helmets, etc.

- Ans A). i, ii and iii B). Only ii C). Only i D). Only iii

Correct Answer: A

Q.42 The two characteristic features seen in carbon, that is, _____ and _____, when put together, give rise to a large number of compounds.

- Ans A). tetravalency; covalency B). trivalency; catenation C). covalency; catenation D). tetravalency; catenation

Correct Answer: D

Q.43 In the reactivity series, which of the following metals can displace zinc from the zinc sulphate solution?

- Ans A). Aluminium B). Copper C). Silver D). Lead

Correct Answer: A

Q.44 An iron nail is placed in a solution of copper sulphate. Which of the following changes will NOT occur?

- Ans A). The blue color of the solution fades. B). Iron ions enter the solution. C). The solution temperature increases significantly.
D). A brown layer forms on the iron nail.

Correct Answer: C

Q.45 Compared to non-metals, which of the following is true about coefficient of linear expansion (α_l) of metals?

- Ans A). Metals have same value of α_l B). Metals have relatively smaller value of α_l C). Metals have relatively higher value of α_l
D). The value of α_l is zero for all metals

Correct Answer: C

Q.46 What type of error is introduced when an observer consistently reads a scale from an angle instead of directly in front?

- Ans A). Random error B). Instrumental error C). Parallax error D). Gross error

Correct Answer: C

Q.47 At which of the following temperatures, will water have the maximum density?

- Ans A). 10 °C B). 0 °C C). 16 °C D). 4 °C

Correct Answer: B

Q.48 Considering the bond lengths of N₂ and O₂, which statement is correct?

- Ans A). Bond length of N₂ is greater than O₂. B). Bond length of O₂ is greater than N₂. C). Bond lengths of N₂ and O₂ are equal.
D). Bond length of N₂ is double that of O₂.

Correct Answer: B

Q.49 When an acid dissolves in water, hydrogen ions (H⁺) are released. What happens to them?

- Ans A). They remain as free H⁺ ions in the solution. B). They combine with water molecules to form hydronium ions (H₃O⁺).
C). They form hydrogen gas (H₂). D). They combine with hydroxide ions (OH⁻) to form neutral molecules.

Correct Answer: B

Q.50 Which of the following statements is/are correct regarding the position of metals in the activity series based on their natural occurrence?

Statement I: Moderately reactive metals are commonly found as oxides, sulphides or carbonates in nature.

Statement II: The metals at the top of the activity series are found in nature as free state.

Ans A). Only Statement II is correct. B). Only Statement I is correct. C). Neither Statement I nor Statement II is correct.
D). Both Statement I and Statement II are correct.

Correct Answer: B

Q.51 Which of the following instruments is used to determine the purity of milk based on Archimedes' principle?

Ans A). Thermometer B). Lactometer C). Barometer D). Hydrometer

Correct Answer: B

Q.52 Which of the following internal macroscopic states of the body changes when a bullet is fired from a gun?

Ans A). Heat energy B). Temperature C). Kinetic energy D). Chemical energy

Correct Answer: C

Q.53 The oxides of _____ and _____ metals can be reduced to metals by heating alone in air.

Ans A). Zn; Cu B). Hg; Zn C). Hg; Mn D). Hg; Cu

Correct Answer: D

Q.54 Which of the following are the correct conditions required for total internal reflection to take place?

- (i) The light should be travelling from an optically rarer to an optically denser medium.
- (ii) The light should be travelling from an optically denser to an optically rarer medium.
- (iii) The angle of incidence should be less than the critical angle for a given pair of media.
- (iv) The angle of incidence should be greater than the critical angle for a given pair of media.

Ans A). Both (i) and (iii) B). Both (ii) and (iii) C). Both (ii) and (iv) D). Both (i) and (iv)

Correct Answer: C

Q.55 Identify whether the given statements are true or false.

Statement-I: Henry was the first to give a quantitative relation between the pressure and solubility of a gas in a solvent, which is known as Henry's law.

Statement-II: At a constant temperature, the solubility of a gas in a liquid is directly proportional to the partial pressure of the gas present above the surface of a liquid or solution.

Ans A). Statement-I is true but Statement-II is false. B). Both the statements are false. C). Statement-I is false but Statement-II is true.
D). Both the statements are true.

Correct Answer: D

Q.56 A Gaussian spherical surface of radius R enclosing a charge Q, has an outward flux ϕ associated with it. What will be the new outward flux associated with the Gaussian spherical surface, if the radius of the Gaussian surface is doubled?

Ans A). $\phi/2$ B). $\phi/4$ C). 2ϕ D). ϕ

Correct Answer: D

Q.57 What does a higher value of thermal conductivity of a material signify?

Ans A). The material will conduct heat more rapidly B). The material will be highly resistive C). The material will not conduct heat
D). The material will conduct heat more slowly

Correct Answer: A

Q.58 Which of the following statements is/are FALSE regarding the characteristics of sound waves?

- (i) A loud sound wave has a lower amplitude compared to a soft sound wave.
- (ii) A loud sound wave has a greater amplitude compared to a soft sound wave.
- (iii) The frequency of a high-pitched sound is greater than that of a low-pitched sound.
- (iv) The frequency of a high-pitched sound is lower than that of a low-pitched sound.

Ans A). Both (i) and (iv) B). Both (i) and (iii) C). Both (ii) and (iv) D). Both (ii) and (iii)

Correct Answer: A

Q.59 Select the option that is correct regarding the following two statements labelled Assertion (A) and Reason (R).

Assertion: In insulators, the energy gap between the valence band and conduction band is less than 3 eV.

Reason: The valence electrons in an insulator are very loosely bound to the nucleus.

Ans A). Both assertion and reason are false.

B). Assertion is true but reason is false.

C). Both assertion and reason are true and reason is the correct explanation of assertion.

D). Assertion is false but reason is true.

Correct Answer: A

Q.60 What is the significance of the Bohr radius in the Bohr model of the atom?

Ans A). Represents the radius of the highest energy state of the atom

B). Represents the radius of the nucleus

C). Represents the radius of the middle orbit in an atom

D). Represents the radius of the smallest orbit or lowest energy state

Correct Answer: D

Q.61 Why is fullerene considered a unique allotrope of carbon?

Ans A). It is the softest allotrope of carbon.

B). It is formed only in high-pressure conditions.

C). It contains a pentagonal and hexagonal carbon arrangement.

D). It has a two-dimensional structure.

Correct Answer: C

Q.62 Identify whether the given statements are true or false.

Statement-I: When two or more compounds differ in the position of substituent atom or functional group on the carbon skeleton, they are called position isomers.

Statement-II: Propan-1-ol and Propan-2-ol are examples of position isomers.

Ans A). Both the statements are false.

B). Statement-I is false but Statement-II is true.

C). Statement-I is true but Statement-II is false.

D). Both the statements are true.

Correct Answer: D

Q.63 Given below are two statements. Read the statements carefully and select the correct option.

Statement I: Green chemistry is a way of thinking and is about utilising the existing knowledge and principles of chemistry and other sciences to reduce adverse impact on environment.

Statement II: Green chemistry is a production process that would bring about minimum pollution or deterioration of the environment.

Ans A). Both Statements I and II are true.

B). Statement I is false but Statement II is true.

C). Statement I is true but Statement II is false.

D). Both Statements I and II are false.

Correct Answer: A

Q.64 Which of the following is NOT true according to Rutherford's atomic model?

Ans A). The nucleus is surrounded by a cloud of electrons.

B). Most of the space within the atom is empty.

C). The total positive charge of the nucleus is greater than the total negative charge of the electrons in the atom.

D). All the positive charge and mass of an atom are concentrated in a very small region.

Correct Answer: C

Q.65 How does the magnetic field inside a current-carrying solenoid behave?

Ans A). It forms concentric circles around the solenoid.

B). It is non-uniform and varies in strength.

C). It consists of parallel straight lines, indicating uniformity.

D). It disappears when the current is switched on.

Correct Answer: C

Q.66 Which of the following statements is/are true?

i. Kössel and Lewis in 1916 developed an important theory of chemical combination between atoms known as the electronic theory of chemical bonding.

ii. According to the electronic theory, atoms can combine either by transfer of valence electrons from one atom to another (gaining or losing) or by sharing of valence electrons in order to have an octet in their valence shells.

Ans A). Only i

B). Both i and ii

C). Neither i nor ii

D). Only ii

Correct Answer: B

Q.67 Which of the following reactions is an example of a combination reaction?

Ans A). $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$ B). $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ C). $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}_2$ D). $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$

Correct Answer: C

Q.68 The processes used for removing the gangue from the ore are based on the differences between the _____ or _____ properties of the gangue and the ore.

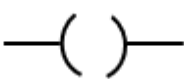
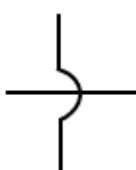
Ans A). solubility; thermal

B). magnetic; thermal

C). chemical; electrical

D). physical; chemical

Correct Answer: D

Q.69 The present accepted value of the electrical charge on an electron is _____ $\times 10^{-19}$ C. Ans A). 1.602 B). 1.6022 C). 1.6 D). 1.602176 Correct Answer: D
Q.70 Arrange the following metals according to the order of increasing reactivity. Ca, Zn, Cu, Au Ans A). Au < Cu < Zn < Ca B). Au < Zn < Cu < Ca C). Au < Cu < Ca < Zn D). Au < Ca < Zn < Cu Correct Answer: A
Q.71 Which of the following gives the correct decreasing order of atomic radii of the given elements of second period? Ans A). B < Be < N < O B). Be > B > N > O C). Be < B < O < N D). Be < B < N < O Correct Answer: D
Q.72 Considering significant figures, what will be the correctly rounded result of $21.16 + 5.5$? Ans A). 26.60 B). 26.00 C). 26 D). 26.7 Correct Answer: D
Q.73 Which of the following is NOT refined electrolytically? Ans A). Zinc B). Iron C). Copper D). Silver Correct Answer: B
Q.74 Which of the following is the unit of work function (ϕ_0) in photoelectric emission? Ans A). Volts B). Amperes C). Electron volt (eV) D). Coulomb Correct Answer: C
Q.75 Which of the following pairs is INCORRECT? Ans A). BCl_3- SP^2 hybridisation B). H_2O - SP hybridisation C). BeCl_2 - SP hybridisation D). CH_4 - SP^3 hybridisation Correct Answer: B
Q.76 What is the symbol of a wire crossing without joining in a circuit? Ans A).  B).  C).  D).  Correct Answer: B
Q.77 Which gas is released when ethanol is oxidised to ethanoic acid using an oxidising agent? Ans A). Oxygen B). No gas is released. C). Hydrogen D). Carbon dioxide Correct Answer: B
Q.78 Which method is commonly used to extract copper from copper sulphide (Cu_2S)? Ans A). Roasting in air B). Dissolving in acid C). Reduction with carbon D). Electrolysis Correct Answer: A
Q.79 Given below are two statements. Read the statements carefully and select the correct option. Statement I: Bohr's model could account for the stability and line spectra of hydrogen atom and hydrogen like ions (for example, He^+, Li^{2+}, Be^{3+} and so on). Statement II: Bohr's model could not explain the ability of atoms to form molecules by chemical bonds. Ans A). Statement I is false but Statement II is true. B). Statement I is true but Statement II is false. C). Both Statements I and II are true. D). Both Statements I and II are false. Correct Answer: C
Q.80 Calculate the time taken by a sound wave of frequency 1 kHz and wavelength of 40 cm to travel a distance of 4 km. Ans A). 10.0 seconds B). 2.1 seconds C). 1.0 seconds D). 21 seconds Correct Answer: A
Q.81 Which of the following is the correct relation between electric power (P) of an appliance, electrical energy consumed (E) by the appliance and time (t) for which the appliance is used? Ans A). $P = \frac{E^2}{t}$ B). $P = E^2t$ C). $P = \frac{E}{t}$ D). $P = Et$ Correct Answer: C

Q.82	For an insulator at room temperature, the conduction band is _____.			
Ans	A). partially filled	B). absent	C). completely filled	D). empty
Correct Answer: D				
Q.83	The energy of an electron in a multielectron atom depends on which of the following?			
	i. Its principal quantum number (shell) ii. Its azimuthal quantum number (subshell)			
Ans	A). ii only	B). i only	C). Neither i nor ii	D). Both i and ii
Correct Answer: D				
Q.84	If a nucleon has p number of neighbours within the range of nuclear force, then the binding energy is _____.			
Ans	A). directly proportional to square of p B). inversely proportional to square of p C). directly proportional to p D). inversely proportional to p			
Correct Answer: C				
Q.85	Which of the following elements is a solid at room temperature and pressure?			
Ans	A). Mercury	B). Sodium	C). Oxygen	D). Hydrogen
Correct Answer: B				
Q.86	Which device is used to get a constant DC voltage from the DC unregulated output of a rectifier?			
Ans	A). Zener diode	B). Rectifier	C). Forward biased p-n junction	D). Photo diode
Correct Answer: A				
Q.87	The Doppler effect is a phenomenon associated with which of the following?			
Ans	A). Wave motion	B). Thermal conduction	C). Particle motion	D). Electrostatic force
Correct Answer: A				
Q.88	Which of the following relationship holds in regards to energy gap in Conductor (E_{gC}), insulator (E_{gi}) and semiconductor (E_{gS})?			
Ans	A). $E_{gS} < E_{gC} < E_{gi}$	B). $E_{gi} < E_{gS} < E_{gC}$	C). $E_{gi} < E_{gC} < E_{gS}$	D). $E_{gC} < E_{gS} < E_{gi}$
Correct Answer: D				
Q.89	Which of the following correctly describes the trend of ionic radius across a period?			
Ans	A). Cations decrease in size and anions increase in size across a period. B). Ionic radius increases from left to right across a period. C). Ionic radius increases uniformly across a period. D). Ionic radius remains the same for all elements in a period.			
Correct Answer: A				
Q.90	An electric lamp of resistance 20 Ω , and a conductor of 4 Ω resistance are connected in series in an electric circuit. What will be the resultant resistance of the circuit?			
Ans	A). 1.25 Ω	B). 0.8 Ω	C). 8 Ω	D). 24 Ω
Correct Answer: D				
Q.91	The gravitational force between two bodies of the same mass placed at a distance 'd' apart is 'X'. If the mass of both bodies is doubled, and the distance between them is reduced to d/4, what will be the new gravitational force in terms of X?			
Ans	A). 16X	B). X/64	C). 64X	D). X/16
Correct Answer: C				
Q.92	Temperature is considered as a/an _____ variable while specifying the state of a gas in thermodynamics.			
Ans	A). non-important	B). microscopic	C). macroscopic	D). undefined
Correct Answer: C				
Q.93	Charles' Law states that for a fixed mass of gas at constant pressure, the volume of a gas is:			
Ans	A). inversely proportional to the temperature in celsius B). directly proportional to the temperature in celsius C). inversely proportional to the temperature in kelvin D). directly proportional to the temperature in kelvin			
Correct Answer: D				
Q.94	During the electrolytic refining of copper, which of the following observations is correct?			
Ans	A). Impurities from crude copper move to the cathode along with pure copper. B). Pure copper is deposited at the anode, and impurities settle as anode mud. C). The anode dissolves, and pure copper is deposited at the cathode. D). The electrolyte is a neutral solution that does not participate in the refining process.			
Correct Answer: C				

Q.95 Why did Bohr's model fail for multi-electron atoms?

Ans A). It assumed electrons are positively charged.

B). It did not consider electron-electron interactions.

C). It was based on classical physics only.

D). It ignored the nucleus of the atom.

Correct Answer: B

Q.96 Which of the following is NOT a unit used to measure the binding energy of a nucleus?

Ans A). Electron volt (eV)

B). Atomic mass unit (amu)

C). Joule (J)

D). Million electron volt (MeV)

Correct Answer: B

Q.97 Mixing an acid or base with water results in decrease in the concentration of ions ($\text{H}_3\text{O}^+/\text{OH}^-$) per unit volume. Such a process is called ____.

Ans A). dissociation

B). decomposition

C). dilution

D). dissolution

Correct Answer: C

Q.98 What is the main function of the ozone in the stratosphere?

Ans A). It absorbs excess carbon dioxide.

B). It protects living organisms from harmful UV radiation.

C). It prevents strong winds from reaching the earth.

D). It reduces the temperature of the atmosphere.

Correct Answer: B

Q.99 Applying a layer of paint on an iron surface helps prevent corrosion primarily by:

Ans A). increasing the strength of iron

B). preventing exposure to air and moisture

C). reacting with iron

D). absorbing oxygen

Correct Answer: B

Q.100 Which of the following is equivalent to the energy of 1.602×10^{-20} J?

Ans A). 1 eV

B). 0.5 eV

C). 0.1 eV

D). 10 eV

Correct Answer: C